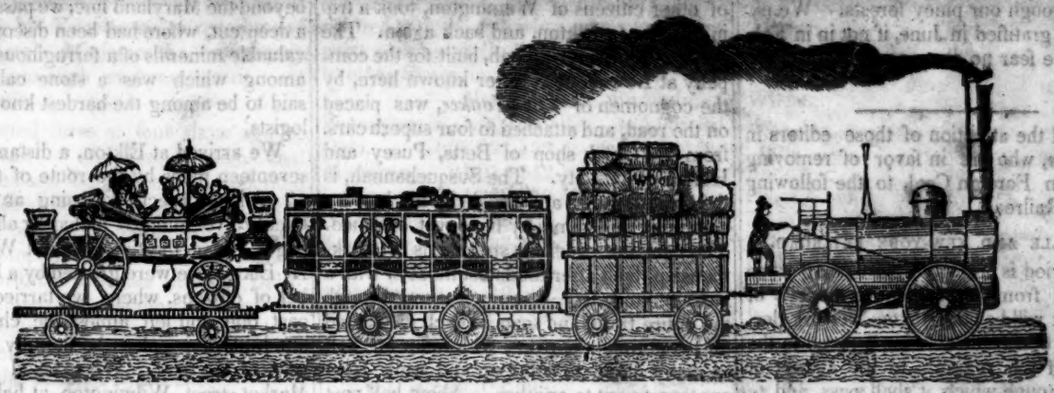

AMERICAN RAILROAD JOURNAL,

AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE

D. K MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PROPRIETORS.] SATURDAY, JANUARY 28, 1837. [VOLUME VI—No. 4

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JANUARY 28, 1837.

LIST OF SUBSCRIBERS to the **Railroad Journal**, that have paid, (continued.)

W. T. James,	City, N. Y.,	Jan. 1,	1837.
Faber & Merle, 2 copies,	"	"	1838.
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J. C. Nielson, Havre de Grace, Md.,		Jan. 1,	1838.
Jas. Murray, Havre de Grace, Md.,		Jan. 1,	1838.
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P. Condom, Marseilles, France,		"	1838.
Draper & Co. Paris,		"	1838.

FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build, on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make contracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Rrailroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Henniker, N H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Haverhill, N. H. Across the Contoocook river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesse river, at Squakiehill, Mount Morris, New-York. Across the White River, at Hartford Vt. Across the Connecticut River, at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the FIRMEST WOODEN BRIDGE ever built in America.

Notwithstanding his present engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms.

MOSES LONG.

Rochester, Jan. 13th, 1837. 4—y

CENTRAL RAILROAD AND BANKING COMPANY.

The following gentlemen were on Monday elected Directors of this instiuriion for the ensuing year:

Messrs. W. W. Gordon, Robert Habersham, J. P. Henry, J. Washburn, R. Hutchinson, N. J. Bayard, Geo. B. Cumming, P. A. Tupper, Isaac Cohen.

And, at a meeting of the Board yesterday, W. W. Gordon. Esq., was unanimously re-elected President.

On announcing the above election, we cannot refrain from indulging in a passing notice of the Railroad, now in a state of forwardness,—a Road, which, when completed, will deserve the name it in anticipation bears —*The Central Railroad of Georgia.* A few short weeks since, there was not a handful of sand cast up from the soil, where it has lain "*time whereof the memory of man runneth not to the contrary.*" Now twelve miles and a half of the Road are opened, more than *six* of which are graded. We learn that *ten* miles will be ready for the rails by the first of February. The Company is only awaiting the reports of the Engineers, at present engaged in the examination of different routes, to determine the course of the road, and there is every prospect of having *thirty* miles ready for use by the first of June. Upwards of one thousand laborers and mechanics are employed. Three hundred tons of iron have been shipped from Liverpool, and seven hundred more will be shipped in the course of the present month.

Our readers will remember that the Company declared a dividend in last month, on their capital reserved for banking purposes, of *five* per cent. for six months, or *ten* per cent per annum. We profess not to be gifted with the light of prophecy, but with the spirit which has distinguished the direction, and their able Engineer, we look forward to the day as not far distant, when the productions of Western Georgia will whirl through Yamacraw to the Bluff, where Oglethorpe and Tomochichi, more than a century since, exchanged the pipes of amity.

Go ahead! Mr. Randall, and let your axemen, and your spademen announce to Western Georgia, that the citizen of Old Savannah have awakened from their past lethargy, and desire to be connected with them, one and all, in a fraternal embrace. We are, ourself, impatient for a ride (by

steam) through our pincy forests. We expect to be gratified in June, if not in in February. We fear no disappointment.—[Sav. Geor.]

We call the attention of those editors in New-York, who are in favor of removing the duty on Foreign Coal, to the following projected Railroad.

POTTSVILLE AND NEW-YORK RAILROAD.

The period is rapidly approaching when a railroad from this region to the city of New-York will be undertaken—a work destined to be of incalculable importance to the interests of this region,—to the district of country through which it shall pass, and to the consumers of coal generally—especially to those of all our Atlantic cities. We know of no public improvement fraught with more highly beneficial consequences to the population of the interior of this State, than the proposed railroad to New-York. And we trust that no short-sighted, selfish, narrow-minded or illiberal spirit of opposition will manifest itself to this great enterprise—which must sooner or later be accomplished, in spite of every opposition, from whatever quarter it may proceed. Had such a railroad been in operation during the last season, we should not have heard any outcry about the scarcity of coal at present, and the poor man would have been furnished with this indispensable article of living, at reasonable prices. Nor would the subject of removing the duty on Foreign Coal have been agitated or prayed for by any class of our fellow citizens. The business of transportation would have continued up to the present moment, and prosecuted throughout the whole season with enery. There would then have been little or no pause or suspension in the business of mining—all hands would have been actively and incessantly employed, and monopoly and speculation in our large cities set at defiance by the consumer.

We learn from Samuel B. Fisher, Esq., a skilful Engineer, who has lately been engaged in making a reconnoissance of the route as far as Delaware river, that the same is not only practicable without inclined planes, but also that the grade required will not exceed eighteen feet in the mile throughout the whole distance, with the exception of a single mile—in which it must be increased to 40 feet—a very trifling elevation. Our New-Jersey neighbors are ready and willing to give us all the assistance that may be required to connect the proposed railroad with the Somerville railroad, or any other that may be preferred, so that little or no difficulty need be apprehended in New-Jersey. This great work is therefore only awaiting the legislative sanction to carry it at once into execution. The stock will be taken with avidity beyond all question. And those who are principally instrumental in its accomplishment, will be hailed at no distant day as great public benefactors.—[Miners Journal.]

A TRIP ON THE RAILROAD.

The portion of the Wilmington and Susquehannah Railroad between this city and Elkton is now completed. Yesterday, at the invitation of the President, and Directors, the stockholders and a considerable number of other citizens of Wilmington, took a trip in the cars to Elkton, and back again. The locomotive Susquehannah, built for the company at Lowell, and better known here, by the cognomen of *The Yankee*, was placed on the road, and attached to four superb cars, from the work shop of Betts, Pusey and Harlan of this city. The Susquehannah, is the most powerful and decidedly the best locomotive, the company have yet obtained. The cars are excellent specimens of workmanship, built after the latest models, with a passage, and free communication through the entire train, and seats in each calculated for twenty-eight persons, with room for half as many more, to stand up and walk from one apartment to another. About half-past ten o'clock yesterday morning, the train was drawn up at the foot of Market street, and our citizens to the number of a hundred and thirty, or forty took their seats. This was the first trip of the cars over the road, and there was some little anxiety, and apprehension, entertained, by many of the company at the result of the experiment, and the chances of some accident or catastrophy, where as yet, the locomotive, cars, engineer and road, had not become very well acquainted with each other. In this respect, all were most agreeably disappointed. As it regards speed, pleasure and enjoyment of almost every kind, the experiment was most decidedly, successful. We left Market street, at thirty-five minutes past ten o'clock, and proceeded very rapidly four or five miles on the road, when some of the gudgeons to the cars become a little heated, from not having been worn smooth and adjusted, and it was found necessary to haul up, cool off, and apply a little more oil. We then applied the steam, and resumed our course, *puffing* and *blowing* along, to somewhere not far beyond, what is called McGrann's deep cut, when an incident occurred that frightened some, and amused others, much more than injuring any one. A strudy oak, that had not been sufficiently looked to, by the workmen and engineers, and which seemed rather to dispute a passage for *The Yankee* and his train, extended a branch some distance into the road which swept the sides and tops of the cars, breaking some twenty or thirty panes of glass, and scattering the pieces with violence enough, to draw blood from half a dozen noses, that were too prominent to escape a collision. After adjusting the difficulties from this accident, and bestowing proper attention to the wounded, by laughing them into a pleasant countenance again, we continued our course to Newark, and arrived opposite the village, at twenty minutes to twelve, where we were met, and greeted by a number of the most substantial and influential citizens intersted in the road.

As it happed here, *The Yankee* was under full headway, and went *whizzing* by, as though, he was not willing the Newarkers should get more than a glimpse of him, this trip.

We must confess, we had a strong inclination if possible to obtain a delegation from Newark, to join us, as far as Elkton, and back again, but we had no influence in matters of steam, and locomotives, besides, before we were fully aware of the presence of the Newarkers, we were out of sight, and the error, could not be retrieved. Not far beyond the Maryland line, we passed through a deep cut, where had been discovered some valuable minerals of a ferruginous character, among which was a stone called *jasper*, said to be among the hardest known to geologists.

We arrived at Elkton, a distance of over seventeen miles by the route of the road at 12 o'clock, precisely, being an hour and twenty-five minutes including all the stoppages, from the time we left Wilmington. At Elkton, we were greeted by a large number of citizens, where we tarried till half-past one, and left amidst the cheerings of hundreds of people, who literally lined both sides of the road. We reached the foot of Market street, Wilmington at half-past two, after stopping two or three times, making the time on our return, one hour.

Every one was delighted with the excursion. The route of the road, passes through the most beautiful section of this county. It was not a little amusing to see the flocks of sheep, cattle and sometimes horses as *The Yankee* came smoking along with his train, at such unwonted rapidity, take to their heels, and escape as if the de'el was to pay. Our country friends generally, who reside on the route, improved the opportunity of witnessing from their porches, the first trip of the cars over the road.

The annual election of Directors of the Railroad Company, took place yesterday afternoon, and among the first acts of the new board, will be to decide, whether they will now establish a line between Philadelphia and Baltimore, by means of stages on the part of the route not yet completed. Should they do so, it will be carried into effect in a few days. It is the expectation of many of our citizens, that such, will be their determination.—[Wilmington Gaz.]

A public meeting was held at Quebec on the 27th ultimo, to promote the Quebec and Belfast Railroad. The projectors of this line seem to be nothing daunted by the certainty of the road from St. Andrews (N. B.) to Quebec being undertaken, though the one must very materially affect the interests of the other. At the meeting it was resolved that subscription books for stock should be forthwith opened at Quebec, and other places.

Some such arrangement with the United States government, as is referred to in the annexed Resolution, would be of incalculable advantage to the Province.—[Montreal Morning Courier.]

4. *Resolved*, That an application be made to his Excellency, the Governor-in-Chief, requesting that he may be pleased to bring under the consideration of the King's Government, the great and lasting advantages which would result to the commerce of the Canadas, if an arrangement of a permanent character were entered into with the Government of the United States, so that goods, wares and merchandize might be transported by the subjects of each government through the territory of the other, under such convenient restrictions as may afford mutual security, and at the same time not materially embarrass the operations and business of the Railroad;

and praying his Excellency to recommend to his Majesty's Ministers the expediency of entering into such an arrangement.

We adverted three or four days ago to the importance of the Susquehanna Canal to the interests of Baltimore, and we hinted at the obligation which consequently rested upon our citizens of making extraordinary efforts to complete the work at the earliest possible period. Besides placing Baltimore in a most commanding position for the enjoyment of the immense trade which seeks a market through the Ohio and Pennsylvania State Canals, and enabling her to enter into advantageous competition for supplying the West with merchandize, the Canal to tide will throw open the vast Coal regions of the Susquehanna, and thus create a new trade of incalculable value to the commerce of the Chesapeake Bay, and of this its principal city. The importance of this single item is thus earnestly dwelt upon in the following editorial article, published in the Harrisburg Intelligencer of the 5th instant:—[American.]

COAL—SUSQUEHANNA CANAL.

A writer in the United States Gazette, says, that when the Canal, that is now making, from Columbia to tide, is finished, which will be in two years, the Anthracite Coal of the Wyoming valley will be carried in immense quantities to market. He states that "COMPANIES HAVE ALREADY BEEN FORMED, *composed principally of citizens of New-York, to carry coal down the canal to Port Deposit, and from thence by sloops to the Eastern cities.*" We have no doubt of this. The completion of the canal to tide, will be a new era in the coal trade. It is now confined to the Lehigh and Schuylkill, whose coal fields, great and important as they are, are small in comparison to those on the Susquehanna, stretching from Lykens valley on the South, more than one hundred miles, to the head of Wyoming valley on the North. *We predict that in less than ten years, that such an amount of coal will pass down the Susquehanna, that more sloops will be loaded at its mouth, than are now employed in the coasting trade of the whole Union.*

Fortunes will be made by the owners of coal hills. At this time coal lands can be purchased reasonably. In Lykens valley, only eighty miles from tide, and one hundred nearer market than the Wyoming, are fortunes to be made. Here is an immense coal mountain, and a railroad connecting it with the river. The coal is superior to any other, for its easy ignition and purity. The owners, especially those on the North side of the mountain, have not yet found out their great value; and yet only on a few acres in the twenty thousand, are there any mines opened. We understand that a Boston company have purchased a portion of the valuable mines of Messrs. Elder & Haldeman. There are still other chances here which we presume will not be long neglected.

BUSINESS OF THE PORT OF BUFFALO.—By the courtesy of Capt. CARYL, Collector of Canal Customs, at this port, we have been favored with the following—Account of property passing at Buffalo, on the Erie Canal, to other States, in the year 1836:—

	Merchandize.	Furniture.
Pennsylvania,	1,909,260 lbs.	165,956 lbs.
Ohio,	27,621,432 "	3,310,936 "
Michigan,	21,814,542 "	4,819,554 "
Indiana,	4,323,070 "	144,808 "
Illinois,	5,570,904 "	1,257,548 "
Kentucky,	827,780 "	20,655 "
Tennessee,	477,608 "	
Alabama,	40,987 "	
Missouri,	145,539 "	18,324 "
Upper Canada,	80,213 "	123,996 "
Total,	63,011,335	9,871,777

This shows an increase of merchandize, over last year, of 26,090,275 lbs., or about 70 per cent., also an increase of furniture over the same year, of 523,388 lbs.

The amount of merchandize left at Buffalo, coming from the east, is 23,425,762 lbs., being about 1,100,000 lbs., more than last year; the amount of furniture left at Buffalo, coming from the east, 1,596,321 lbs., being about 76,000 lbs., more than last year.

Amount of property left at Buffalo, during the year 1836, coming from the east.

Sundries,	lbs.	84,180
Domestic Spirits,	galls.	29,309
Boards and Scantling,	feet.	194,154
Timber,	do.	12,876
Staves,	lbs.	550,000
Flour,	bbls.	1,640
Wheat,	bush.	37,645
Corn,	do.	11,097
Barley,	do.	1,827
Other Grains,	do.	4,859
Peas and Beans,	do.	310
Potatoes,	do.	640
Pork,	bbls.	803
Beef,	do.	101
Salt,	do.	53,169
Cider,	do.	437
Oil,	do.	747
Dried Fruit,	lbs.	126,134
Wood,	cords.	14,027
Clover & Grass Seed,	lbs.	564
Flax Seed,	do.	174,720
Wool,	do.	17,160
Cheese,	do.	55,653
Butter and Lard,	do.	4,494
Hops,	do.	9,103
Hemp,	do.	81,812
Apples,	bbls.	5,557
Mahogany,	lbs.	9,621
Fur,	do.	3,572
Peltry,	do.	295
Gypsum,	do.	265,810
Stone,	do.	16,637,455
Brick,	do.	1,065,760
Bacon,	do.	1,316
Merchandize,	do.	23,425,762
Furniture,	do.	1,596,321
Clay,	do.	2,347,076
Mineral Coal,	do.	435,700
Tallow,	do.	10,567
Pig Iron,	do.	1,120
Iron Ware	do.	919,357

Amount of property shipped, or first cleared at Buffalo, during the year 1836, going to the east.

Sundries,	lbs.	321,524
Domestic Spirits,	galls.	35,300
Boards & Scantling,	feet.	3,443,875
Shingles,	M.	620
Timber,	feet.	510,348
Staves,	lbs.	10,345,012
Flour,	do.	139,178
Wheat,	bush.	304,090
Rye,	do.	1,500
Corn,	do.	204,355
Barley,	do.	4,876
Other Grain,	do.	28,641
Blocks,	lbs.	52,580
Beer and Cider,	bbls.	39
Bricks,		783,930
Pork,	bbls.	7,383
Beef,	do.	805
Salt,	do.	1,549
Ashes,	do.	7,789
Oil,	do.	36
Dried Fruit,	lbs.	27,380
Wood,	cords.	14,027
Clover & Grass seed,	lbs.	104,303
Flax seed,	do.	220,842
Wool,	do.	252,367
Hides and Skins,	do.	86,076
Cheese,	do.	110,347
Butter and Lard,	do.	1,272,624
Hops,	do.	19,386
Bees wax,	do.	27,037
Tobacco,	do.	3,794,905
Leather,	do.	8,201
Fur,	do.	206,604
Peltry,	do.	68,190
Deer Skins,	do.	394,937
Stone,	do.	5,114,699
Feathers,	do.	29,386
Bacon,	do.	1,010,866
Merchandize,	do.	495,082
Furniture,	do.	851,816
Clay,	do.	3,844,000
Mineral Coal,	do.	67,582
Lead,	do.	21,489
Pig Iron,	do.	769,135
Iron Ware,	do.	661,749
The amount of tolls in 1835,		$106,213 58
" " 1836,		$158,074 99
Being an increase over last year equal to		$51,861 41

—a trifle less than fifty per cent.

It will be perceived that the greatest increase in the business of the canal, is in merchandize forwarded to other States.—This increase is greater in proportion to the capital than that of last year, and in all probability will continue to increase in geometrical instead of arithmetical progression.—Hence we perceive the great necessity of a speedy enlargement of the whole canal, to keep pace with this immense increase of business.—[Daily Star.]

REPORT OF THE SURVEY OF THE ROANOKE DANVILLE AND JUNCTION RAILROAD.—BY WALTER GWYNN, ENGINEER.

To the Subscribers of the Roanoke, Danville and Junction Railroad.

(Concluded.)

EASTERN DIVISION.

This embraces a distance of 67 miles, 1,515 feet, and extends from Danville to the mouth of Daniel's Run.

From the crossing of the Dan river, at the Falls of Dan, an ascent, at the rate of 39 feet per mile, is effected at but little expense, through the valley of Bear Creek, to the ridge near Mr. Dix's, dividing the waters of Sandy from those of Banister river—thence the route pursues this ridge along,

and close to the Franklin Court House road, to Mr. Smith's store. Soon after leaving Mr. Smith's store, we pass imperceptibly on to the ridge common to the sources of tributaries to the Pig, Sandy, and Banister rivers, and commerce descending to Pig river, which is crossed just below the junction of Snow Creek, and the route then immediately ascends to the Louisland road, and continues in the direction of the road, on the ridge between Pig and Blackwater rivers, until it reaches Grassy Hill; thence winding around the southern slope of the hill, it ascends to attain the desired point on the Carolina road, about five miles from Rocky Mount.

From the Carolina road, the route continues on the crest of the ridge, about two miles; when it descends at the rate of 58 and 80 feet per mile, passing near the Double Spring, to the valley of Blackwater river, and thence through Mr. Callaway's meadows to the mouth of Daniel's Run. It will be perceived from the foregoing, that with the exception of the grade at the crossing of Pig river, the ascent to Grassy Hill and the descent to the Blackwater, this portion of the route presents a profile within the range of locomotive power.

MOUNTAIN DIVISION.

This comprises the mountain pass and includes a distance of 8 miles—206 feet. Here as well as at the other Gaps in the mountain, which I have named, stationary power cannot be avoided.

It is not considered necessary, to distribute the ascent among the planes, suffice to say, that the summit will be attained by three inclined planes, with a total ascent of 1,313 feet. When it is considered that these planes descend in the direction of the heaviest traffic, the objections to them are in a great measure removed;—for by timing the arrival at the foot and at the head of the planes, it will rarely occur that any power in addition to the gravity of the descending train, will be required to raise the ascending train. With the proper *guards* and precautions, the transportation on inclined planes can be as uninterruptedly and very nearly as safely conducted as on a level road.

Having attained the summit of the mountain, the road continues level for about one mile and 223 rods and then descends along McDaniel's and Pipe-Stem Runs, 166 feet in a distance of 1,197 feet, to the valley of Little River, the termination of this Division.

The expense of the graduation and superstructure of this division will only be enhanced by the necessity of grading for a double track on the summit, for a portion of the way on the descent, and on the line between the planes. The excavations consist principally of earth, the rock which it will be necessary to blast, will be required in the construction of the road.

WESTERN DIVISION.

This includes the remaining distance of 62 miles 1,144 feet, to the assumed termination of the road at Evansham. The location of this division will be laborious and difficult. Little river is very circuitous, and the question constantly recurs what undulations in the plane of the railroad, and what amount of excavation and embankment is admissible and equivalent to the lengthened road, and the curvatures around the bends of the river. Except in extreme and very palpable cases, calculations founded on data derived from actual surveys, will be necessary, to enable the Engineer to decide these questions. The route under consideration has been traced with the view to test the practicability of shortening the line, by cutting off the abrupt bends of the water courses, which, on reference to the map, seem to mark out the course of the railroad.

Therefore, immediately after crossing Little River, at the termination of the Mountain Division, the route ascends, and by a deep cut passes through the high ground between the River and Booth's Branch, just above their confluence—thence up Booth's Branch nearly to its source—thence across to Beaver Dam Creek, and ascending along its valley to a favorable place, it crosses the ridge between Beaver Dam and Cole's Creek—and thence up Cole's Creek to its source in Laurel Ridge—and crossing through this ridge the bottoms of Brush Creek are entered, along which the route descends to the Walnut meadows. Thence winding around several steep and abrupt hills which bound the right bank of the Creek, the route ascends to a favorable depression in the Pilot Mountain. After crossing the Pilot Mountain, it descends along its face to a favorable point of departure—whence it stretches across a succession of hills and hollows requiring much cutting and filling. At Hall's mill, Little River is crossed a second time—thence winding around the hill on which the mill houses are situated, the route falls into a valley, which it pursues to its source, and by a single cut it enters the valley of Cecil's Creek, along which it descends to New River. Here our attention was directed to the country between.—New River and Reed Creek, and the result of our inquiries led to the continuation of the route up New River to a favorable site for a bridge, of which we availed ourselves to cross to the right bank of the River, and thence along it to Honacre's Mill.

At this point, the road leaves the River and ascends a valley which crosses the main stage road near Mr. Galbreath's, and leads to a favorable pass into Draper's valley.—Thence along this valley and through ravines draining into Reed Creek, which intersects the route twice, it reaches Evansham. This portion of the route, although rough, admits of a much more favorable location than a casual view of the country would indicate.

I have been thus particular in describing the ground in order that those interested may be able to judge of the correctness of my estimate, by comparing it with the difficulties to be overcome.

The cost of the work is based upon the amount of excavation and embankment, cut off by the grades as I have modified and adapted them to the ground.

In estimating the cost of a work, our ground, so diversified, and presenting so many intervening obstacles, an actual location, only, would furnish data for a detailed estimate. The facts elicited by the reconnoisance and survey enable me to arrive at the *maximum* cost of the work, which will be found in the following estimate:

Excavation, Embankment, Drains and Bridges,	$1,778,145
Superstructure, 137 miles, 2,865 ft., at $5000 per mile,	687,711
Total,	$2,465,856

SUMMARY

Of the Cost of the Roanoke, Danville, and Junction Railroad.

From the Petersburg and Roanoke, the Portsmouth and Roanoke, and the Greensville and Roanoke Railroads to Danville, 172 miles, 2,025 feet,	$2,213,671
From Danville to Evansham, 137 miles, 2,865 feet,	$2,465,856
Total cost of excavation, embankment, bridging, and superstructure,	$4,679,527
Cost of Inclined Planes, Superintendence, Locomotive Engines, Cars and Coaches, Shops, Ware-houses, land, water stations, and contingencies,	$575,000
Total cost of Railroad,	$5,254,527

I have estimated for a double track to alternate with the single track on some portions of the road, which, with telegraphs properly distributed, will afford all the accommodation of a continuous double railway-track, and admit of the extension of the business of the road with as little inconvenience and delay. By a line of telegraphs, the expenses of which will be much less than the interest on the first cost of a double track on the portion of the road where a single one is contemplated, the position of the train may be ascertained, its departure from any of the Depots may be readily communicated, and with almost the quickness of thought, news may be conveyed from one end of the line to the other.

Indeed, I am inclined to believe, that by means of the Telegraph, the double track may be dispensed with entirely, except at the watering stations.

The prevalent custom of making the transportation of produce subordinate to the conveyance of passengers has given rise to the fallacious opinion that produce cannot be transported so profitably as passengers, and that therefore, railroads must be confined to populous districts. To remedy this I would have two classes of engines, one for speed, at the rate of thirty or forty miles per hour,—for the conveyance of passengers, the other of greater weight and power for the transportation of produce, under low velocities from four to six miles per hour. These may travel at night with safety, and thus render a double track less necessary, and greatly reduce the cost of transportation.

The only desideratum involved is the construction of an Engine with a capacity for generating steam, travelling under the low velocities before mentioned and to admit of

an increase of the load in proportion to the reduction of speed.

It is believed that by a very simple modification of the locomotives in common use the object would be attained, and that the great diminution in the wear and tear of engines and cars moving at the rate of four or five miles per hour, would at the ordinary rate charged on the Portsmouth and Roanoke Railroad, yield as much profit on the transportation of produce, as would be derived from carrying passengers at the rate of twenty or thirty miles per hour. And upon this plan, grades of 40, 50, and 60 feet are less objectionable. A load due to such grades may be attached to the heavy engines: and they will be easily overcome by the passenger engines with any train they would be likely to have.

OF THE POLICY AND PROFITS OF THE IMPROVEMENT.

Under this head I can add but little to the able and comprehensive report of the committee of the Danville Convention, to which I beg leave to refer, and will here take the liberty of transcribing an extract:

"An inspection of the map of Virginia as connected with her Southern, and South-Western boundary, offers at a glance to the eye of the examiner, an immediate and direct communication by the channel of the Roanoke, between the great South-Western valley, and our Atlantic border.

A rich and expanded area of the surface of Virginia, embracing not less than ten thousand square miles, with a population of one hundred and eighty thousand souls, a wide extent of the territories of Tennessee and Kentucky, and the richest portions of our sister State of North Carolina, embracing of her population one hundred and sixty thousand souls, seems at once connected by the ties of a common interest in this common channel of commerce, which want of energy, or want of resources in our people has hitherto left unimproved.

Is the contemplated work practicable?—We assure our fellow-citizens that it is not only practicable, but in our opinion presenting fewer obstacles to its accomplishment than any known work of the same extent, on the continent of America.

Whichever route may be ultimately selected between the Eastern and Western limits of the contemplated improvement, the distance cannot far exceed a line of 300 miles.

Allowing for every contingency, it may be safely asserted, that the round sum of 5,000,000 dollars would cover the whole expenditure on the contemplated work.

Is that a sum within our resources? Is its magnitude such as to deter us from the prosecution of an enterprise, pregnant as we believe it is with blessings inestimable to so large a portion of our people? Upon this part of the subject, no observation of ours can be necessary.

In times like these, of unexampled prosperity, when so large a portion of capital in every part of our wide-spread confederacy, is courting a profitable investment, it can only be necessary to show that ample returns must reward the investment to ensure the application of the estimated sum to any contemplated work.

By a reference to "the synopsis of the James River and Kanawha Improvements, &c.," we find the amount of tonnage on the South-Western route, embracing part only of that region which must inevitably seek our improvement as the cheapest and most expeditious, estimated at 100,000 tons. Of this by far the largest portion is now carried to Baltimore, at an enormous expenditure of time and money. The time ordinarily occupied by a wagon, in travelling from Wythe Court House to Baltimore, may be estimated at fifty days, while on the contemplated railroad, the rich productions of the valley may reach Norfolk, Petersburg or Richmond, in two days, or the Baltimore market in three. Taking then, as the basis of our calculation, the Report of the State Engineer, confirmed by the Report of the Abingdon Convention, as set forth in the synopsis above referred to, we may estimate the immediate trade meeting this improvement at Evansham, as yielding a tonnage of 100,000 tons.

To this, add the trade of the counties east of Wythe in Virginia and North Carolina, bordering on the proposed road, which on the fairest principles of calculation known to the Committee, may be estimated at 50,000 tons.

The aggregate amount of tonnage now annually seeking its destination by wagons, and other means of transportation, is 150,000 tons.

From this calculation are excluded the vast mineral resources on the intermediate line of the road. The salt, lime, gypsum, iron and lead; the three last sufficient to supply every possible demand, in fact, inexhaustible; yet according to the report of the Abingdon Convention, which valuable document we beg leave to recommend to the attention of the public, "the transmission of mineral productions of South-Western Virginia and East Tennessee, would form the largest source of profit to the stockholders of the railroad company." Add to all these the continued stream of travel which now runs through the South-Western valley, and which, as certain as cheapness, comfort and expedition invite the steps of the traveller, would mainly be diverted to the projected route, and the revenue of the road would swell to an amount which this Committee would feel reluctant to indicate. Here we reach the great thoroughfare to the South and South-West. Since January last, not less than thirteen thousand slaves alone, have passed the Western *terminus* of this improvement. But excluding from our estimate of profits all these sources of revenue,—excluding also, every prospective addition to these resources which may be derived from the awakened energies of a people now slumbering over their invaluable interests: and confining our calculations to the tonnage known to exist, and now inviting this improvement, we shall see that on a capital of $5,000,000, the return would almost exceed credibility. Suppose the 150,000 tons actually seeking its destination, to travel on an average only through half the extent of our contemplated road, and suppose the average freights on exports and imports to be reduced to six cents per ton per mile, the aggregate amount of tonnage on the road, would yield a revenue of one million three hundred add fifty thousand dolla.s annually.

Without pretending to accuracy in all our estimates and calculations, although they seem to us, based on undeniable facts; and on the public reports of accredited public agents, we may safely assume that no error can place the revenue on this investment below twenty-five per cent. It may be objected that we have not taken into consideration the cost of superintendance and repairs.—To meet this objection, we suggest, that the conveyance of passengers and the transportation of the mails must amply cover, if not largely exceed all such inccidental expenses. But should our expectations from these sources prove fallacious, can a doubt be entertained that the transportation of the minerals above referred to, which as certainly as the work shall have been constructed, must in large quantities be transported on this route, will more than compensate for any deficiency in the other resources of the improvement.

To the Capitalist it holds out the strongest inducement to investments, the certainty of large dividends. To the Farmer it will be a clear saving of $20 on every hogshead of tobacco carried to market; it will afford him the means of enriching his lands, and, in many instances, will enhance their value ten fold. The great activity and impulse which it will impart to trade will enable the merchant to extend and enlarge his business, and the State will share the benefits of the general prosperity in the increased contributions to her Treasury—and in the wealth and social happiness of her citizens. And she will not fail to lend a helping hand to break down the barriers which seperated this fair portion of her territory from the benefits derived by every other portion of the State from the canals and roads which she has profusely spread.

So far our observations have been confined to the country east of Evansham, where the products of the soil, the mineral resources, the import trade and the travel fully justify the improvement and strongly recommend it to the patronage of the State of Virginia, as well as to the people and State of North Carolina. But the extension of the road to the Tennessee line forms a component part of the scheme; and if we are permitted to look to the West, to a connexion with the Charleston and Cincinnati railroad, and with the New-Orleans and Nashville railroad, we do not think we can be charged with extravagance when we say that this road must be among the most successful railroads in the country. It has been happily styled the *Junction* railroad. Its union with the two last named roads affords a participation in the benefit of the reciprocity of trade with the whole West and South-west portions of the country. At its Eastern *terminus* it unites with the Petersburg railroads through which the markets of Petersburg, Richmond, Fredericksburg, Alexandria, Washington, and Baltimore may be reached—with the Portsmouth railroad which leads to the ocean and the Port of Norfolk and Portsmouth one of the best seaports in the union, which by a little enterprise would command the commerce of the world; or whence, if it must

be so—transportation can be readily and cheaply effected to the Northern markets.

And your railroad forms a junction with the Raleigh and Gaston railroad, and with the railroad now in progress of construction to Wilmington, N. C., thus giving the planter a choice of markets in this State also, which at no distant day when the railways which she has projected from her seaports to the interior shall be in operation, will hold out inducements for an interchange of many of the commodities of the West. Another and very far from being an unimportant consideration just at this time, when the public mind is distracted with rival schemes, is the fact of your railroad harmonising with all the existing and chartered improvements in the State. I have shown that it communicates with every market place in the State, and thus adds greatly to the profits of the railroads from the Roanoke to Fredericksburg, and from the Roanoke to Norfolk and Portsmouth. It is an auxiliary to the James and Kenawha River improvement. To prove this it is only necessary to advert to the reciprocity of your charter and that of the railroad from Lynchburg. The two companies by mutual compact have agreed to accept the hand of fellowship in the valley and go on to the Tennessee line together.

It will be conceded that it does not conflict with the Appomattox Improvemonts; and from the refusal of the Legislature to grant a charter for a railroad from Farmville to Cartersville in the grounds of the adequacy of that improvement to the wants of that portion of the State, we must infer that for the same reasons it will not sustain the scheme for a railway running parallel to it and intersecting the Roanoke at Danville and the James River at Lynchburg. There is then no improvement or any likely to be made between the James and Roanoke Rivers which would come in conflict with your railroad.—North of the James River the Louisa railroad accommodates the counties South of the valley district—through which the State in imitation of the example of Pennsylvania in stepping the Baltimore and York railroad at her boundary line, until she had completed the Susquehannah canal, the Columbia railroad, and established her line of railways and canals to Pittsburg, will certainly not permit the Baltimore railroad to extend farther than Staunton—at least until she has made further progress in her own improvements.

We will now return to the immediate line of your contemplated railway. Here, we find a conflict with the Roanoke Navigation Company.

Their improvements are totally inadequate to the present trade of the Roanoke country. It would be but just however to remunerate them for any depreciation in the value of their work by the proximity of your railroad Thus compensating this Company, I maintain that your railroad will not conflict with any existing or chartered improvement in either of the States of Virginia or North Carolina.

All of which is respectfully submitted, by Gentlemen,

Your most ob't, servant,

WALTER GWYNN, Civil Engineer,

Wilmington, N. C., Dec. 1st. 1836.

From the Troy Budget.

DREADFUL CALAMITY—SEVERAL LIVES LOST.

Early last summer, many of our readers are aware, a large mass of clay burst from the hill on the east section of the first ward in this city, followed by a gushing stream of water, and doing no other injury than covering a large portion of ground, at the base, with the bowels of the hill. Last evening, about soven o'clock, a similar occurrence took place on the same spot, but, we regret to say, greater in extent, and exceedingly fatal in its consequences. An avalanche of clay came tumbling from an eminence of nearly 500 feet, moving down the base of the hill to level land, and thence continued, from the impulse it received, to the distance of about 800 feet, covering up acres of ground, accompnaied with a cataract of water and sand which kept up a terrible roar.—The mass moved along with great rapidity, carrying with it two stables and three dwelling houses, and crushing them and their contents in thousands of pieces. The stables, and horses were moved to a distance of over 200 feet, into a hollow on the corner of Washington and Fourth-streets.

In its way, the avalanche also encountered a brick kiln, burying it partially over and crumbling it together, from which a few minutes after, the flames rushed forth and lit up the city as with a great conflagration.—This signal was the first intimation that was had of the catastrophe, to those not in the immediate vicinity.

The three dwelling houses destroyed were of light structure, and one occupied by Mr. John Grace, another by Mrs. Leavensworth, and the third by Mrs. Warner, the last of which was fortunately vacant at the time of the calamity. In Grace's house were himself and wife and little boy. *The two former were extricated from the ruins dead,* and the boy was taken, out alive, very little hurt, bare footed and bare headed, the buildings having been shattered in a thousand pieces which is one of the most singular escapes that ever came to our knowledge. There were four of Mrs. Leavenworth's family in her house, herself and three children.

Two of the children were in bed at the time and probably asleep, and were afterwards taken from the midst of the wreck dead; crushed almost to a jelly, and were undoubtedly thrown instantly from a natural sleep into a sleep of death. Mrs. Leavensworth was taken out shockingly bruised, and was barely alive when we last heard from her. Fortunately three of the family were at church at the time and escaped awful deaths.

The stables were owned by Mr. Bingham, in which were 22 horses, and all carried along with the mass together, with nine or ten dirt carts. Six horses were taken from the ruins alive—the other sixteen were killed. The dead bodies of the horses can this morning be seen mingled among the ruins. Mr. Bingham's loss must be considerable.

We learn that the body of a person was found, name unknown, who was probably employed in the brick kiln or stables—which makes in all FIVE DEAD BODIES taken from the ruins last night. There are probably others buried in the ruins, and it is likely some persons at the time were in the stables or brick kiln.

GREAT CURIOSITY, AND WONDREFUL EFFECTS OF THE EXPANSION OF WATER BY FREEZING.

The attention of many of our curious and scientific citizens was yesterday very pleasingly arrested, by an occurrence at the iron foundry of Messrs. Harkness, Voorhees & Co., in this city, exhibiting a specimen of the extraordinary power of the expansion of water by freezing.

An immensely large iron anvl, weighing between three and four tons, and imeasuring nearly three feet in diameter, had been left lying by the door of the furnace, exposed to the atmosphere. The anvil was perfectly solid, with the exception of a very small crack or crevice in the centre of one of the sides, about five inches long, and about four inches in depth, which from the rain had become filled with water. The quantity of water which the crevice contained could not have exceeded half a gill. In the course of the night of the 20th December, this water, became frozen, and, extraordinary as it may appear, its expansion completely severed in two parts the immense mass of solid iron, and so great was its expansive power, that when the separation took place, a large log of wood which lay on the top of the anvil, was thrown to a distance of several feet.

Had the crevice been filled with powder, and the powder ignited, the effect would not have been a thousandth part as great.

We doubt not this interesting fact will be noticed with interest by the scientific curious throughout the United States.—[Cinciti Whig.]

The tremendous expansive power of freezing water has been proved, by a number of experiments, no less remarkable than the incident above described. We remember reading an account of one made at Woolwich, in England, several years ago, which gave an amazing proof of the power in question. An iron thirty-two pounder was prepared with an iron plug or tompion, twelve inches long, made to screw into the mouth of the piece with a very close and deep-cut worm, (or spiual groove); the cannon was filled with water, the plug scrwed in, and moreover fastened with strong chains and ropes to the axles; and thus charged, it was exposed to the cold of a severe winter night. In the morning the chains and ropes were found broken, the worm destroyed, and the plug driven bodily out, while a cylinder of ice occupied half the space it had previously filled.

In Norway it is a constant practice with the mill-stone quarries to avail themselves of this irresistible expansive force. They quarry out large cylinders of stone, long enough to make six or eight mill-stones of the usual thickness; then drill a number of holes, about six inches deep, in the circumference of the cylinder, so as to girdle it by rings of holes, at the proper distances. Into these holes are driven wooden plugs, perfectly saturated with water, and the frost soon splits the cylinder into as many blocks as there are circles.—[N. Y. Com.]

LARGE CORN. Mr. John Way, Sen., of Londongrove, informs us that he raised during the last season, an ear of corn, which produced 1684 grains—and four other ears each of which MEASURED 14½ inches.

REPORT OF JOSEPH D. ALLEN,

TO THE

COMMISSIONERS OF THE NEW-YORK AND ALBANY RAILROAD COMPANY.

GENTLEMEN.—The result of the survey and examination which at your request I have thus far made relating to a route for the proposed New-York and Albany Railroad. I respectfully submit in the following report.

A topographical map of the country explored together with a profile of the route described and taken as the basis upon which I have made an estimate of the probable cost, are also herewith presented.

That portion of the route over which I have extended my surveys, is embraced between Harlem River and a point 1¼ miles above the village of Milltown, situated on the Croton River in the county of Putnam, a distance from Harlem of 52.6 miles on the line traversed via. White Plains and New-Castle.

The topographical features of the county of Westchester and Putnam also, not only upon the region embraced in the surveys but in their general character, are quite undulating and irregular. The soil is generally good, and easy to be excavated, consisting chiefly of a sandy loam united with a gravel formation, and as an agricultural district, it presents a highly interesting appearance. The principal streams intersecting its central portion, are the Croton, the Bronx and Saw-Mill Rivers which have their course in a southerly direction. The valleys are therefore favorably ordered for the location of such means of communication with the city of New-York as the public necessities of the country may require.

The route which so far as the surveys now enable me to judge to be the most feasible for the purposes of the road, commences at the point of the ridge on the north bank of Harlem River, opposite the termination (on the Island of New-York) of the fourth Avenue; and pursuing a northerly direction soon crosses the Westchester Turnpike, and enters the valley of Mill-Creek about ¾ths of a mile north of Harlem Bridge.

The valley of Mill-Creek which is highly eligible for the object, is pursued to its source, from which at a few rods distance the line enters the valley of the Bronx. After crossing to the east bank of the latter stream its valley is pursued for 15 miles, which extends the route to the mouth of Davis Brook, a small tributary of the Bronx, joining it 2¾ miles north of the village of White Plains.

From this point several routes present themselves by which to pass on to the Croton valley, and their relative bearings will be more clearly indicated, by the features shown upon the accompanying map. The waters of the Bronx are discharged into the Sound at Westchester, while those of the Croton, originating much further north, find their way into the Hudson, near the village of Sing-Sing.

The surface of that region ranging between the head waters of the Bronx and the Croton at Milltown over which several of the eastern tributaries of the latter stream have their course, and convey the drainage of the adjacent country towards it, assumes an irregular character. Many of the dividing ridges with their intermediate valleys into which the surface is broken, here lie in a direction more opposite to our course.

Levels have been extended over the country bearing eastwardly from Robbins' Mills, situated on the outlet of the Rye Ponds, in the valley of the Bronx, passing through Bedford village, thence northward to the Croton, and upon this route several of those transverse ridges were encountered.

The chief of these and the most elevated are the Comung, the Long Pond and the Peach Pond ridges. The first is the most formidable, and to pass it would require the route to be extended nearly around its southern extremity, which lies a short distance beyond the east line of this State.

From the examinations which I have been able to make I am induced to believe that in passing from the valley of the Bronx to that of the Croton, the elevations or changes of level will be greater upon any route bearing eastwardly of the head-waters of the Bronx after leaving White Plains, than upon a course passing around westerly, with the view of sooner entering the Corton valley.

On entering the valley of the Bronx from the head of Mill-Creek the line crosses to the east side of the stream, a short distance below Williams' Bridge, upon an embankment averaging 7 feet in height for a distance of about 1300 feet, and pursues a fair course along the foot of the upland which is somewhat undulating, though upon a grade of easy ascent in general, until it reaches Tuckaho Factory where it re-crosses to the west side of the river.

From thence the line has a favorable location near the foot of the ridge which forms the western bound of the valley as far as Popham's Mill. Upon the next succeeding mile the bounding ridges upon either side lie very near the river.

The western bank is pursued as the most feasible, and will allow of a sufficient width by excavating the principal part in the slope of the hill, the remainder being obtained from the channel of the stream, by raising a protection wall upon the exterior of the road bed to guard it from the abrasions of the current. Though the ridges have here left a narrow pass, the requisite width can be obtained, and the work made safe from the floods of the River, at a moderate expense. The route from thence is continued over ground generally feasible, along the margin of the stream, passing Horton's and Purdy's Mills, and again crossing the Bronx to the east side at George Bogerts, opposite to about ¾ths of a mile west of the village of White Plains.

Some slight changes in the channel of the stream at a few points on this last portion, will be required upon the east side in order to preserve a fair direction in the line, and also sometimes avoid projecting points of upland which occasionally contract the valley.

The River at Bogerts is crossed upon a viaduct of 25 feet span, and the valley upon an embankment 13½ feet high for a distance of 1000 feet. From thence the line runs chiefly upon the table land moderately elevated to the mouth of Davis' Brook which comes to unite with the Bronx through a feasible pass-way in the western boundary of its valley from a north-western direction.

After having first pursued a line from this point along the Bronx to Robbins' Mills and thence more easterly through Bedford and North Salem villages, and on to the Croton valley, near Soddom Corners, I returned and continued the route up Davis' Brook to its source, where we met a small river called Fly Brook, which flows into Saw-Mill River, uniting therewith on our course near Unionville Church.

The summit grade between the Bronx and Saw-Mill River is 39 feet above the former, and is 250 feet above the tide.

From Unionville, (in Mount Pleasant) the line passes up Saw-Mill River to the summit ground which separate its waters from those flowing into the Kisko in an opposite direction.

The grade line upon this summit is 305 feet above the tide. In descending from thence to the Kisko it follows the border of the valley of the dead Swamp in which originates a small stream called Chopequa Brook. Crossing Kisko river about ¾ths of a mile below Kirby's Mills in the town of New-Castle, the line continues in a favorable direction up the valley of Branch Brook, another small stream which unites with the Kisko opposite the mouth of the Chopequa. The features from the Bronx to this point are quite regular though the ground along both of the Brooks last mentioned is in part of a marshy character, yet will allow of a very direct line and of a grade which will depart but slightly from a level.

At the head of Branch Brook, we reach the summit from whence the drainage of the adjacent country passes northward and falls into Cross River, a considerable Mill stream which originates in the vicinity of the village of Bedford and North Salem about 4 miles east of our course and unites with the Croton at Whitlockville.

From that summit where the grade line is 278 feet above the tide we descend by the valley of Muddy Brook to Cross River, and pass the stream upon a viaduct of 40 feet span, with the grade elevated 30 feet above the river.

The ground for two miles from the head of Muddy Brook presents a tolerably even surface, but has an inclination of 31½ feet per mile. The surface from thence onward past Cross River, to the farm of John Wilson, embracing a distance of 3 miles, is quite undulating, and as will be apparent by a refference to the accompanying profile, portions of the embankment and excavations will be more heavy than will ordinarily occur on the line.

Leaving this vicinity, the route passes over the table lands near the foot of the elevated ridge, which here becomes the main eastern boundary of the Croton valley, and enter upon its bottom grounds near the Post Office and residence of Stephen Frost, about

half a mile above Golden's Bridge, in the town of Salem. The elevation of our grade here is 207 feet above tide.

The route from thence pursues the valley of the Croton River, the remainder of the distance traversed, passing Owensville, Doansville, Soddom Corners, and thence up to the point before mentioned, 1¼ miles above Crawford's Mills at the village of Milltown.

The dam at Crawford's mills is 405 feet above the tide; the grade line 4 feet above it, making the total elevation at that place 409 feet above the tide.

The Valley of the Croton between Golden's Bridge and Milltown, in general, has a width which is ample for the object, and will admit of an eligible location upon grades moderately inclined, for most of the distance. Those points at which the greatest irregularity of features occur are at Owensville, Doansville, Soddom Corners, and a portion of the distance from thence to Crawford's mills. At Owensville the upland banks approach near the Stream, and its ascent in the space of one mile, will raise the grade to 35 feet per mile, at Doansville, the valley upon a short distance is irregular in its course, and has an ascent above its average rate, at Soddam its winding direction, together with the boldness of its northern bank, renders it difficult to avoid some irregularity in the course of the line. It will doubtless be most judicious to pursue the valley, as the line is shown on the map, rather than cross the river near the village, and encounter the expense of cutting down the rocky ridge on the one side, and raising a heavy bank on the other, to obtain a more direct location. Though the course of the line is here more irregular than at any other point on the route, a radius of 1000 feet will be the shortest required, and occur at only two points, while the grade will have an easy inclination. Passing onward up the valley, its features are considerably undulating as far as Milltown, and the ascent upon a short distance rises to 35 feet per mile. On reaching that place, however, the route enters upon an extensive district, which is far more regular in its topographical features and from the personal examination which I have made, and from facts derived from former surveys, the route from thence northward for thirty miles continues to present a much more eligible character for the purpose, and it cannot be questioned that the work may be executed at a cost comparatively much below that upon the portion embraced in the present survey.

The line crosses the Croton at several of its most abrupt curvings below Milltown, and at other places a change of the channel is contemplated. The river upon this portion is not so large as to require Bridges of great expense, nor is its flow of water augmented during the flood season, to an extent demanding extra protection against injuries sometimes anticipated from causes of that nature.

It is proper to observe that the line as traversed and described, may, doubtless, be improved at various points, when upon a more full examination a deffinite location is made, and I trust the cost will, at several points, be thereby reduced below that now estimated. The curves are made very easy in general, upon a good length of radius, varying from 2000 to 12,000 feet. At two points only, are they necessarily reduced to a shorter length.

As before stated, I have extended lines of survey over a very considerable distance, (more than twice the length) beyond that of the line described, and presented as the basis upon which my estimate of cost is made. Branch or parallel lines, sometimes near, and again some miles distant, have been traced along the valley of the Bronx, on either side, and by a route departing therefrom, passing through Bedford Village, to the Croton Valley, near Soddom Corners, to which reference has also been made. I have not been able to find a route by the latter course so far feasible as to justify its adoption, without passing around the south end of the Comung Ridge, and thus far out of the limits of the State for a short distance, for which no chartered provision is now made.

In passing from the valley of the Bronx towards that point, before reaching Mile Square, the grade would rise at the rate of 40 feet upon a portion of the distance, and again, in passing the dividing ridge between Cross River and the Titicus, called the Long Pond Ridge, to near 50 feet per mile.

Between North Salem Village and the Croton Valley, in the direction desired towards Milltown, lies the wide and elevated Peach Pond Ridge, over which the line could not pass at a reasonable expense, bearing in the course of the latter from the former place without encountering grades, both in the ascent and descent, more than twice as highly elevated as are found at any point upon the route of the Bronx and Croton Valleys. If instead of passing thus directly over the ridge, a line is continued as was surveyed, more westerly and partially around it, to avoid a portion of the elevation, an ascent would still be encountered of nearly 60 feet per mile, and moreover, we should approach near to an intersection with the Croton line at Doansville, and thus add to its length by a more circuitous direction 3½ miles.

Many of the citizens of Bedford, North Salem and their vicinity, manifest much interest in the work, and propose an examination of other routes which they suppose may be feasible through that district. This should, no doubt, be done previous to determining upon a location.

It will be seen by an inspection of the topographical features of the country, between White Plains and Kisko River, in New-Castle, as indicated on the map, that a route continued quite up the valley of the Bronx to its source, passing through Dark Valley, so called, and down that branch of the Kisko which originates at that place, to an intersection with the present line, near its crossing on the Kisko, would be more direct than that traversed by way of Saw-Mill River.

My time has not been allowed me to extend a line of levels over this route to fully determine the question of its feasibility, but I have made a personal examination of it, and am induced to recommend its survey in the hope of favorable result.

By a reference to the accompanying profile of the line, it will be observed, that over the greatest portion of the distance, (or about 30 miles) the grade is either level or ranges below about 12 feet per mile, that it reaches in the maximum to 35 feet; and I trust this may be reduced, on revising the line. The inclination, it will be seen also, is chiefly towards the city of New-York, the direction of the greater trade.

The character of the line, in respect to its inclination, will be seen in the following tabular exhibit of the grades, as they occur in passing from Harlem River northward to Milltown.

Distance, in chains of 100 feet.	Rate per mile. feet ascent.	feet descent.	Distance, in chains of 100 feet.	Rate per mile. feet ascent.	feet descent.
18	Level.		63		31.68
105	7.04		57	Level.	
183	11.44		105		19.36
84	19.36		54	Level.	
156	Level.		27	22.88	
78	5.28		36		26.40
105	12.32		33	2.64	
78	17.60		96		19.36
78	12.32		54	35.20	
117	14.08		48	Level.	
45	Level.		114		17.60
45	10.56		45	Level.	
93	22.00		75	31.68	
126	3.52		60	21.12	
99	19.36		42	12.32	
78	7.04		66	35.20	
51		13.20	75	3.52	
66		17.60	63		
60	Level.				

The 30 miles next succeeding, may, no doubt, be made to conform quite near to a level grade, and so regarded in such farther extension of the table.

I have based the estimate of the probable cost upon the plan of a *road-bed*, graded to a width of 24 feet, designed for a double track.

The mechanical structures, as Culverts, Bridges, &c., so far as consistent, to be given a permanent character.

For the *Superstructure* of the Road, I have contemplated the adoption of the ordinary wooden rail, most generally in use, surmounted with an iron plate or bar, and supported upon longitudinal sills and cross-ties substantially united.

In the estimate which follows, the line is presented in several separate sections, conforming to several natural divisions occurring in the route,

ESTIMATE OF PROBABLE COST.

Section No. 1,

Extends from Harlem River to the Valley of the Bronx, at the head of Mill Creek. The soil consists principally of a sandy loam united with gravel. Distance 5 Miles.

		Quantities.	Rate.	Amount.
Excavation of common earth,	Cub. Yds.	56,312	10c	$5,631
Rock Excavation,	"	1,900	75c	1,425
Embankment,	"	79,449	13c	10,328
Grubbing, low chopping and clearing,	"			180
7 Culverts and Drains, Masonry	"	162	$3	436
Foundations and Pits,	"			185
Road crossings,	"			90
Fencing,	Rods	2,987	$1,50	4,480
Land,	Acres	45	$1,00	4,500
			Total Amount,	$27,305

Section No. 2,

Continues up the valley of the Bronx River to the mouth of of Davis' Brook, in the town of White Plains—soil of the same general character. Distance 15½ miles.

		Quantities.	Rate.	Amount.
Excavation, common earth,	Cub. Yds.	258,040	11c	$28,384
Rock excavation,	"	41,208	75c	30,906
Embankment,	"	404,627	13c	52,601
Road crossings,	"			585
New road,	Rods	30	$2	60
37 Culverts & Drains, Masonry	Cub. Yds.	964	$3	2,892
Foundations and Pits,	"			1,110
2 Culverts over Bronx River, 25 ft. square	Cub. Yds.	568	$4	2,272
Foundations for same,	"			400
2 Bridges over Bronx River, Masonry	Cub. Yds.	437	$3	1,311
Foundations for the same,	"			400
Superstructures for same,	"			720
Protection Wall,	Cub. Yds.	2,542	$1,25	3,177
Grubbing, low chopping and clearing,	"			1,023
Removing Barns,	"			70
Fencing,	Rods	9,192	$1,37	12,639
Land,	Acres	139½	$75	10,462
			Total Amount,	$149,012

Section No. 3,

Passes from the Bronx up Davis' Brook to Saw Mill River, thence up the valley of that stream to its summit, and down Chopequa Brook to Kisko River, near New-Castle Corners. A similar soil continues. Distance 10½ miles.

		Quantities.	Rate.	Amount.
Excavation of common earth,	Cub. Yds.	184,775	11c	$20,325
Rock excavation,	"	2,160	75c	1,620
Embankment,	"	191,707	13c	24,922
Grubbing and clearing,	"			313
22 Culverts and Drains, Masonry,	"	802	$3	2,406
Foundation for same, Pit excavation, &c.	"			700
Road crossings,	"			390
New Road,	Rods	16	$2	32
Fencing,	"	6,530	$1,25	8,163
Land,	Acres	95	$70	6,650
			Total Amount,	$65,521

Section No. 4,

Continues upon a soil in which the excavation will be chiefly gravel and sandy loam, from the Kisko by the valleys of the Branch and Muddy Brook, passing Cross River, and thence to the valley of Croton River, near Golden's Bridge. Distance 9 miles.

		Quantities.	Rate.	Amount.
Excavation, common earth,	Cub. Yds.	229,134	11c	$25,204
Rock Excavation,	"	2,120	75c	2,340
Embankment,	"	302,003	14c	42,280
Grubbing, low chopping and clearing,	"			106
22 Culverts, small size, Masonry,	"	765	$3	2,295
Foundations for the same,	"			770
1 Culvert over Cross River, Masonry	"	680	$4	2,720
Foundations for same,	"			260
1 Bridge,	"	85	$3	255
Superstructure for same,	"			150
Foundation for same,	"			80
Road crossing,	"			360
Fencing,	Rods	5,616	$1,25	7,020
Land,	Acres	81	$70	5,670
			Total Amount,	$89,510

Section No. 5.

This section extends up the Croton Valley to the termination of the present survey near 1¼ miles north of Milltown.

The soil consists principally of gravel and sandy loam. Distance 12.6 miles.

		Quantities.	Rate.	Amount.
Excavation of common earth,	Cub. Yds.	203,471	11c	$22,382
Rock Excavation,	"	1,800	75c	1,350
Embankment,	"	246,516	13c	32,047
20 Culverts 2 to 3 feet chord, Masonry,	"	416	$3	1,248
Foundation, Excavation of Pits, &c., for same,	"			600
11 Bridges, Masonry,	"	2,537	$3	7,611
Superstructure for the same,	"			11,280
Protection Wall,	"	2,282	$1.25	2,853
Foundation for Bridges,	"			2,200
Road crossing,	"			450
Grubbing, low chopping and clearing,	"			114
Removing Buildings,	"			200
Fencing,	Rods	6,270	$1.25	7,838
Land,	Acres	1,13½	$70	7,945
			Total Amount,	$98,118

Aggregate of the Sections.

No.	Distance—Miles.	Amount.
1	5	$27,305
2	15.5	149,012
3	10.5	65,521
4	9	89,510
5	12.6	98,118
	Total Amount,	$429,466

The distance included in the foregoing sections, is 52.6 miles, and their total estimated amount, covering the cost of completing the Road-Bed for a double track, ready for the superstructure, is $429,466, equal to $8,164.75 per mile.

I have estimated the cost of a superstructure for a single track at $4,000 per mile. To provide for the incidental expenses attending the construction of the work, as well as such as now cannot be foreseen. I have made an allowance of a further sum, equal to 12 per cent. upon the above amounts.

The estimate of the probable cost will therefore stand as follows.

Grading double track, 52.6 miles at $8,164.75,	$429,466
Superstructure for a single track at $4,000,	210,400
Contingencies, Engineering and Superintendance, 12 per cent.	76,784
Total Amount,	$716,650

Cost per mile, equal to $13,624,52.

When there is added to the portion of the route embraced in the foregoing estimate, (no doubt the most expensive part,) the

next succeeding, and more eligible portion, extending through the County of Dutchess, and thence on to its junction with the *Western*, and the *Albany and West Stockbridge* Railroad, (the one uniting with it from the east, and the other from the west) and contrast it with the lines of Railroad already executed, or in the progress of construction in the various sections of the country, it is believed a result highly favorable to this enterprise, as it regards cost of construction, character of grades, and the facilities for an economical and rapid transit, will be fully apparent to all.

Respectfully submitted, by your obedient,

(Signed) JOSEPH D. ALLEN.

November 8th, 1836. CIVIL ENGINEER.

TO THE COMMISSIONERS OF THE NEW-YORK AND ALBANY RAILROAD.

GENTLEMEN,—I have with much care, and attention examined the Report, Profile and Ground Plan, of a Survey and exploration of a line run by Joseph D. Allen, for a part of the proposed road extending from Harlem River, opposite the 4th Avenue to near Mill Town, in the county of Putnam, about fifty-two miles.

Knowing Mr. Allen well, and appreciating his long experience on Public Works,—I have the most implicit confidence in his judgment and skill, in the location of a line of Roads, and upon a careful examination of the prices he has affixed to the several items of his estimate. I consider them very liberal, and such as will enable contractors to perform the work, in times like the present.

I am also acquainted with the ground over which Mr. Allen carried his line,—having some years since, examined it in relation to Water for the city; and in 1833, I examined it so far, as to pass over it with a view to a Railroad.

All these examinations, confirm me in the belief, that unlimited confidence can be placed in all that Mr. Allen has done and reported upon,—and I can vouch for the truth of the remarks made by Mr. Allen, that the line from the point where he left it, if pursued northwards, through Putnam and Dutchess, would be found to give ground, extremely favorable as to Grades, Curves, and expense, and a cheaper, and better Road may be made on that part of the Route than the part now surveyed by Mr. Allen.

I have the honor to be,

Gentlemen, Your ob't. servt.

Signed. BENJAMIN WRIGHT.

New-York, January 16, 1836.

From the Journal of the Franklin Institute.

A BILL FOR THE REGULATION OF THE BOILERS AND ENGINES OF VESSELS PROPELLED IN THE WHOLE OR IN PART BY STEAM.*

TABLE OF CONTENTS.

§ 1. Requires an enrolment, and license of navigation.

§ 2. Provides a penalty for navigating without a license.

§ 3. Requires the appointment of an inspector of boilers and machinery, and defines his duties, &c.

§ 4. Requires a certificate to the inspector from the owner or master of a steamboat, of the pressure of the steam intended to be used.

§ 5. Makes provisions intended to secure the safety of boilers.

ART. 1. Requires two safety-valves.

2. Provides for the graduation of the first.

3. Fixes the maximum pressure to be allowed upon it.

4. Provides for the regulation of the second.

5. Requires the second to be inclosed so as not to be accessible except by the captain of the boat.

6. Puts the second under the control of the captain of the boat.

7. Regulates the least rise to be given to the lock-up valve.

8. Directs the form of the lever of the valve.

9 Provides for each two small cylinder boilers, one set of safety-valves.

10. Requires a mercurial-gauge for low pressure boilers, and prescribes its arrangement.

11. Provides that it shall be open to examination by passengers.

12. Requires a fusible metal apparatus to be attached to every boiler.

13. Directs the fusible metal to be inclosed.

14. Provides for its not being tampered with.

15. Inspector to compound the fusible metal.

16. Prescribes the composition of the fusible metal.

§ 6. Requires an examination into the fulfilment of the foregoing provisions, by the inspector, previous to giving certificates.

§ 7. Penalties for interfering in any way with any part of the apparatus provided for the safety of the boiler.

§ 8. Prohibits more than two contiguous boilers to be connected by a water-pipe.

§ 9. Penalties for the bursting of a boiler caused by a deposite.

§ 10. Prohibits boilers in which the metal is exposed to heat without being in contact with water.

§ 11. A thorough examination of the boilers, &c., required of the inspeector. Proofs directed and proof-pressure prescribed. Certificates to be given by the inspector to be posted up under the penalties prescribed. Fees of inspector.

§ 12. Proofs, &c., to be made every six moths. Circumstances under which a license may be forfeited.

§ 13. Requires the pumps for supplying the boilers with water to be kept at work, when a boat is stopped for a temporary purpose. Penalty prescribed.

§ 14. Qualifications for the office of inspector laid down.

§ 15. Penalties for explosions when the master or engineer is engaged in gambling, or is intoxicated. Also from racing, &c.

§ 16. A neglect to obtain or renew certificates as prescribed, to bar from the recovery of a claim for freight or insurance. Owners of boats to be in such cases responsible for loss, or damage by explosions.

§ 17. Penalties in case of explosion when the captain, &c. has neglected to have the required inspections made, and certificates issued.

§ 18. Provides a bounty for boats with boilers on the guards, and suitable bulwarks between them and the interior of the boat.

§ 19. Inspector to be dismissed in case of making false certificates, &c.

§ 20. Provides for the recovery of fines, &c. Proviso, that suits must be instituted within two years after the offence has occurred.

§ 1.*—*Be it enacted by the Senate and the House of Representatives of the United States of America, in Congress assembled,* That it shall be the duty of all owners of steamboats, or vessels propelled in the whole, or in part by steam, on or before the —— day of ——, one thousand eight hundred and ——; to make a new enrolment of the same under the existing laws of the United States, and to take out from the collector or surveyor of the port, as the case may be, where such steamboat or vessel is enrolled, a new license, under such conditions as are now imposed by law, and as shall be imposed by this act.

§ 2.†—*And be it further enated,* That it shall not be lawful for the owner, master, or captain, of any steamboat, or vessel propelled in the whole, or in part, by steam, to transport any goods, wares, and merchandize, or passengers, in, or upon the bays, lakes, rivers, or other navigable waters of the United States, from and after the said —— day of ——, one thousand eight hundred and ——, without having first obtained from the proper officer, a license under the existing laws, and without having complied with the conditions imposed by this act; and for each and every violation of this section, the owner or owners of said steamboat, or vessel, shall forfeit and pay to the United States the sum of ——.

§ 3.‡—*And be it further enacted,* That it shall be the duty of the President to appoint at such ports on the navigable waters, bays, lakes, and rivers, of the United States, as in his judgment will be most convenient to the owners and masters of steamboats, and vessels propelled in the whole or in part by steam, one or more persons who shall be

* The sections of this bill which are taken from that reported by the Committee on Naval Affairs, in the Senate of the United States, at the session of 1835-6, are marked by a note of reference to the sections of the latter.

* § 1. Of the bill reported in Senate U. S.

† § 2. Of bill, &c.

‡ From § 3 of the bill reported, &c.

practical mechanics, of competent skill, to make inspections of the boilers and machinery employed in such boats and vessels, whose duty it shall be to make such inspections, when called upon for that purpose, to give to the owner or master of such boat or vessel, duplicate certificates of all such inspections, and the said person, so appointed, shall, before entering upon the duties of said appointment, take an oath, before some competent authority, faithfully to discharge and perform the same.

§ 4.—*And be it further enacted*, That the owner, master, or captain of each and every boat or vessel propelled in the whole or in part by steam, shall certify, to said inspector, the greatest pressure, or total elastic force, of the steam intended to be produced in the boiler, which certificate shall regulate in the proofs, trials, and construction, hereinafter required.

§ 5.—*And be it further enacted*, That each and every boiler of a steamboat, or vessel propelled in the whole or in part by steam, shall be constructed, and arranged, so as to comply with the following provisions:

1. There shall be two safety-valves, each of which shall be competent to discharge the steam made in the ordinary working of the boiler.

2. The first of said valves shall be graduated by the maker of the engine, and have stamped upon the lever, by which it is weighted, the pressure at which it will by calculation open, when the appropriate movable weight is placed at the several marks. Said pressure to be the difference between the pressure of the steam within, and atmospheric pressure on said valve.

3. When the movable weight exerts its greatest pressure, the total pressure upon said valve shall not exceed the pressure as certified according to the provision of the fourth section of this act.

4. The second of said valves, denominated the lock-up valve, shall be immovably weighted, the total pressure upon it not to exceed said certified pressure.

5. Said lock-up valve, with its lever and other attachments, shall be inclosed in a grated box, or otherwise duly arranged so that it can be raised, but not pressed down, except as above provided, upon its seat.

6. Said inclosure, or arrangements, shall be secured with a lock, of which the captain or master of said boat shall alone have the key.

7. Said inclosure or arrangements, shall admit a rise in the valve of at least one-fourth of the diameter of its seat.

8. The lever of said valve shall be so constructed as ou the rising of the valve, to diminish the effect of the acting weight, by at least one-tenth of the ordinary pressure derived from said weight.

9. When two boilers, each of not more than forty inches diameter, are connected by a steam-pipe, each pair of said boilers may be furnished with safety-valves, as described in this section, for a single boiler.

10. When the certified pressure provided in section fourth, does not exceed two atmospheres, each and every boiler shall be furnished with a mercurial-gauge, indicating by a float or rod, upon a duly graduated and marked scele, the excess of pressure within the boiler over atmospheric pressure in inches of mercury.

11. Said gauge and scale shall be so placed as to be readily examined by any and every passenger on board of said boat.

12. Each and every boiler shall be provided with a fusible metal apparatus of suitable form and dimensions, to be applied to the boiler itself, or to its flues, at the place which may be considered that of greatest heat, or most liable to exposure froma deficient supply of water.

13. Said fusible metal shall be contained in a tube to prevent its exposure to pressure, and shall on softening, communicate an alarm by some suitable device.

14. Said apparatus shall be duly secured from being rendered ineffective, in the manner of the lock-up safety-valve heretofore provided.

15. The fusible metal hereinbefore referred to, shall be compounded by the inspector, who shall place it in the apparatus as aforesaid, and shall satisfy himself that the whole is duly arranged as heretofore prescribed; for which service he shall receive, on certifying the same, a compensation of ——.

16. The said alloys shall be compounded according to the certified pressure of steam within the boiler, by the following table of parts, by weight, of the ingredients.

TABLE OF ALLOYS FOR USE IN CLOSED TUBES, AND WITH A METALTIC STEM.

3	2¼	2	1¼	Certified pressure in atmospheres.
8	8	8	8	Tin.
8	8	8	8	Lead.
4.6	5.3	6.2	7.5	Bismuth.
7	6	5	4	Certified pressure in atmospheres.
8	8	8	8	Tin.
8	8	8	8	Lead.
0.5	1.2	2.2	3.4	Bismuth.
11	10	9	8	Certified pressure in atmospheres.
8	8	8	8	Tin.
11.4	10.6	9.8	8.0	Lead.
		13	12	Certified pressure in atmospheres.
		8	8	Tin.
		13.2	12.3	Lead.

§ 6.—*And be it further enacted*, That before delivering the certificate hereinafter to be provided for, the inspector, heretofore provided, shall examine the apparatus required by section fifth, and shall ascertain that all the provisions of that article are complied with.

§ 7.—*And be it further enacted*, That any person or persons whatsoever who shall wilfully overload or otherwise render inoperative said safety-valve or valves, or render ineffective said mercurial-gauge or gauges, by plugging up or stopping off, or in any other manner prrveniing their action, or shall in any manner, impair, or interfere, with the usefulness of said fusible metal apparatus, shall for every offence be subject to the penalty of —— dollars, and to an imprisonment at the discretion of the court, not to exceed ——, and in case of accident to said steam-boiler, resulting from said offence, by which life is lost, shall be deemed to have been guilty of manslaughter, and punished according to law for said offence.

§ 8.—*And be it further enacted*, That not more than two boilers of a boat, or vessel, propelled in the whole or in part by steam, and those immediately contigious, shall have connected water pipes, nor shall the license heretofore provided for, be issued until the inspector has satisfied himself, and has certified, that the provision of this section is complied with.

§ 9.—*And be it further enacted*, That for each and every bursting of the boiler of a steamboat or vessel propelled in the whole, or in part, by steam, which shall occur from a deposite of sedimentary matter within a boiler, the master of said vessel, shall forfeit the sum of —— dollars; and that in case life shall be lost by the same, he shall be deemed to have been guilty of manslaughter, and shall be liable to prosecution acordingly.

§ 10.—*And be it further enacted*, That no boat or vessel propelled in the whole, or in part, by steam, shall be licensed until the inspector has certified on examination, that no part of the boiler of said boat is, ordinarily, directly exposed to flame, or to heated air from the draught, without the immediate contact of water.

§ 11.*—*And be it further enacted*, That it shall be the duty of the person who shall be called upon to inspect the boilers and machinery of any steamboat or vessel, in conformity to the provisions of this act, carefully, fully, and thoroughly, to inspect and examine the engine and machinery of said boat or vessel, and to state his opinion of their soundness: and he shall, moreover, provide himself with a suitable hydraulic pump, and, after examining into the state and condition of the boiler, or boilers, of said boat, or vessel, it shall be his duty to test the strength and soundness of said boiler, or boilers, by applying to the same a hydraulic pressure equal to three times the certified pressure which the boilers are to carry in steam; and if he shall be of opinion, after such examination and test, that the said machinery and boilers are sound and fit for use, he shall deliver to the owner or master of said vessel or boat, duplicate certificates to that effect, stating therein the age of said boilers, and the pressure of steam which may be carried by them, and which shall in no case exceed one-third part of the proof-pressure, one of which certificates it shall be the duty of said master or owner, to deliver to the collector or surveyor of the port, whenever he shall apply for license or for renewal of license: the other he shall, under a penalty of —— hundred dollars for every day that he shall neglect so to do while the boat is running, cause to be posted up and kept in some conspicuous part of the boat or vessel, for the information of the public; and for each and every inspection of the said machinery, and inspection and test of the said boiler or boilers, the said inspector shall be allowed and paid by the owner or

* § 5 of the bill reported in the Senate of U. S. with slight verbal changes.

master thereof, and before the delivery of said certificates, the sum of —— dollars.

§ 12.*—*And be it further enacted*, That it shall be the duty of the owners or masters of said boats or vessels, to cause the examination of the machinery, and the examination and test of the boilers, as provided in the sections of this act, to be made, at least, once in every six months; and to deliver to the collector or surveyor of the port where such boat or vessel, has been enrolled or licensed, the certificate of such inspection; and on failure thereof, he or they, shall forfeit the license granted to such boat or vessel, and be subject to the same penalty as though he had run the said boat or vessel, without having obtained such license.

§ 13.†—*And be it further enacted*, That whenever the master of any boat, or vessel, or the person, or persons, charged with the navigating said boat or vessel which is propelled in the whole or in part by steam, shall stop the motion, or headway, of said boat, or vessel; or the said boat or vessel, shall be stopped for the purpose of discharging, or taking in cargo, fuel, or passengers; he, or they, shall keep the engine of said boat, or vessel, in motion sufficient to work the pump, and give the necessary supply of water, under the penalty of —— dollars for each and every offence in neglecting or violating the requirements of this section.

§ 14.‡—*And be it further enacted*, That no other than a practical mechanic who shall be of the age of twenty-one years, or upwards, shall have served two years in a steam engine factory, or general machine making establishment, and who shall have a thorough knowledge of the working of an engine, and shall produce satisfactory testimonials of steady habits, shall be employed as an engineer on board of any boat or vessel propelled in whole or in part by steam, provided that for every violation of this section, the owners or master of said boat or vessel shall forfeit the sum of ——— dollars.

§ 15.§—*And be it further enacted*, That for every explosion which shall happen from any cause whilst the captain, master, or engineer shall be engaged in gambling, or attending to any game of chance, or hazard, or shall be intoxicated, or which shall happen from racing, or from carrying higher steam than the quantity authorized by the certificate, the owner of such steamboat, or vessel, shall be subject to the penalties provided for in the sixteenth section of this act; and the captain, master, or engineer shall be respectively subject to the penalties hereafter provided in the seventeenth section of this act.

§ 16.‖—*And be it further enacted*, That any owner or master, of any steamboat, or vessel propelled in the whole or in part by steam, who shall fail to obtain, or neglect to renew, the certificates of examination hereinbefore provided for in the several sections of this act, shall be barred from the recovery of any claim for freight or insurance that may accrue when without said certificate, and should any loss or damage to property, or injury to persons, in such case occur in consequence of the breaking of any part of the machinery, or bursting of the boiler or boilers, the owner shall be responsible to the full amount of said loss, damage, or injury.

§ 17.*—*And be it further enacted*, That the captain or master of any boat or vessel propelled in the whole or in part by steam, which may not have been examined, and obtained the certificates required by the several sections of this act, shall in the event of loss or damage to property, or injury to persons, occasioned by the breaking of any part of the machinery, or the bursting of the boiler, or boilers, be subject to a fine of not less than ———, nor more than ——— dollars, and an imprisonment of not less than ———, nor more than ———; and that in event of loss of life being the result of such accident, then said captain, or master, shall be adjudged guilty of manslaughter.

§ 18.—*And be it further enacted*, That any boat or vessel propelled in the whole or in part by steam, which shall have its boilers upon the guards of the boat, and shall have between them, and the interior of the boat, or vessel, a sufficient bulwark of timber, or other suitable material, so that passengers shall be protected effectually from injury in the event of explosion, shall be, on a certificate to the foregoing effect from the inspector heretofore provided, exempted from the payment of fees for the taking out of the license of navigation, and shall have remitted one half of the fees for proving and for other purposes of precaution heretofore provided. The fees remitted in such case to be assumed and paid to the respective officers by the United States.

§ 19.†—*And be it further enacted*, That for any false certificate, or one given without the thorough examination contemplated by this act, the inspector herein provided shall be dismissed from office, and fined not less than ——— dollars, nor more than ——— dollars, and imprisoned not less than ———, nor more than ——; and shall be incapable of ever being re-appointed to said office.

§ 20.‡—*And be it further enacted*, That all penalties, fines and forfeitures imposed by this act, may be sued for and recovered in any court of the United States of competent jurisdiction within the district, or circuit, where the same may have been incurred, in the name of the United States —one half for the use of the informer, and the other half to the use and benefit of the United States.

Provided, That all suits, actions, or indictments instituted, commenced, or found, under this act, shall be commenced or found, within two years after the offence has been committed, or the cause of action accrued.

* From § 6 of the law reported in the Senate of U. S., the period for making the inspections of the boilers, &c., is here proposed to be extended to six months.

† From § 7 of the bill reported in the Senate, &c.

‡ The Committee propose this section as a substitute for the 16th section of the bill reported in the Senate. That section requiring an examination of engineers by the inspectors.

§ From § 13th of the bill reported, &c,

‖ From § 11th of the bill, &c.

* From § 12th of the bill, &c.

† § 17th of bill reported, &c.

‡ § 18th of bill, &c, with the addition of the proviso at the close of the section.

Miscellaneous.

From Ure's Philosophy of Manufactures.

GENERAL VIEW OF MANUFACTURING INDUSTRY.

(Continued.)

In an analysis of manufacturing industry, the general functions of machines, and the effects of their improvements, ought to be well considered. Machines are of three kinds:—

1. Machines concerned in the production of power.

2. Machines concerned in the transmission and regulation of power.

3. Machines concerned in the application of power, to modify the various forms of matter into objects of commerce.

I. Machines engaged in producing power operate by counteracting gravity, inertia, or cohesion. The steam engine, by the expansive agency of vapor, raises and depresses its ponderous piston, and thereby moves its massive beams and geering.—The hydraulic wheel produces similar effects by the natural flow or fall of water from a higher to a lower level; and the windmill by the currents of the atmosphere. Blasting of rocks, in mining, exhibits elastic power overcoming cohesion.

II. The machines engaged in transmitting and regulating power are, toothed wheels, fly wheels of various kinds, valve governors, shafts, and other geering of mills.

III. The machines engaged in applying power to modify the forms of matter appear, at first sight, to be so multifarious as to set systematic arrangement at defiance. An outline of their connexions and dependencies has been attempted in the next chapter.

The philosophy of manufactures is well displayed in the economy of power. The value of steam impelled labor may be inferred from the following statement of facts, communicated to me by an eminent engineer, educated in the school of Bolton and Watt:—A manufacturer in Manchester works a 60-horse Bolton and Watt's steam-engine, at a power of 120 horses during the day, and 60 horses during the night; thus extorting from it an impelling force three times greater than he contracted or paid for. One *steam* horse-power is equivalent of 33,000 pounds avoirdupois, raised one foot high per minute; but an *animal* horse-power is equivalent to only 22,000 pounds raised one foot high per minute, or, in other terms, to drag a canal boat 220 feet per minute, with a force of 100 pounds acting on a spring: therefore a steam horse-power is equivalent in working efficiency to one living horse, and one-half the labor of another. But a horse can work at its full efficiency only eight hours out of the twenty-four, whereas a steam engine needs no period of repose; and therefore to make the animal power equal to the physical power, a relay of 1½ fresh horses must be found

three times in the twenty-four hours, which amounts to 4¼ horses daily. Hence a common 60-horse steam-engine does the work of 4¼ times 60 horses, or of 270 horses. But the above 60-horse steam-engine does one-half more work in twenty-four hours, or that of 405 living horses!—The keep of a horse cannot be estimated at less than 1*s.* 2*d.* per day; and therefore that of 405 horses would be about 24*l.* daily, or 7500*l.* sterling in a year of 313 days. As 80 pounds of coals, or one bushel, will produce steam equivalent to the power of one horse in a steam-engine during eight hours' work, sixty bushels, worth about 30*s.* at Manchester, will maintain a 60-horse engine in fuel during eight effective hours, and 200 bushels, worth 100*s.*, the above hard-worked engine, during twenty-four hours. Hence the expense per annum is 1565*l.* sterling, being little more than one-fifth of that of living horses. As to prime cost and superintendence, the animal power would be greatly more expensive than the steam power. There are many engines made by Bolton and Watt, forty years ago, which have continued in constant work all that time with very slight repairs. What a multitude of valuable horses would have been worn out in doing the service of these machines! and what a vast quantity of grain would they have consumed! Had British industry not been aided by Watt's invention, it must have gone on with a retarding pace, in consequence of the increasing cost of motive power, and would long ere now, have experienced, in the price of horses, and scarcity of water-falls, an insurmountable barrier to further advancement, could horses, even at the low prices to which their rival, steam, has kept them, be employed to drive a cotton mill at the present day, they would devour all the profits of the manufacturer.

Steam-engines furnish the means not only of their support but of their multiplication. They create a vast demand for fuel; and, while they lend their powerful arms to drain the pits and to raise the coals, they call into employment multitudes of miners, engineers, ship-builders, and sailors, and cause the construction of the canals and railways: and, while they enable these rich fields of industry to be cultivated to the utmost, they leave thousands of fine arable fields free for the production of food to man, which must have been otherwise allotted to the food of horses. Steam-engines moreover, by the cheapness and steadiness of their action, fabricate cheap goods, and procure in their exchange a liberal supply of the necessaries and comforts of life, produced in foreign lands.

Improvements in machinery have a threefold bearing:—

1st. They make it possible to fabricate some articles which, but for them, could not be fabricated at all.

2d. They enable an operative to turn out a greater quantity of work than he could before—time, labor, and quality of work remaining constant.

3d. They effect a substitution of labor comparatively unskilled, for that which is more skilled.

The introduction of new machines into any manufacture, with the effect of superseding hand labor, is tempered by the system of patents, which maintains them for a certain time at a monopoly price, and thereby obstructs their rapid multiplication. Did we admit the principles on which the use of particular self-acting mechanisms is objected to by workmen, we should not be able, in any case, to define the limits of their application. Had parliament acted on such principles sixty years ago, none of our manufactures could have attained to their present state of profitable employment to either masters or men. The immediate causes of their vast augmentation may be ascribed, under the blessing of Providence, to the general spirit of industry and enterprize among a free and an enlightened people, left to the unrestrained exercise of their talents in the employment of a vast capital, pushing to the utmost the principle of the analysis of labor, summoning to their service all the resources of scientific research and mechanical ingenuity; and finally, availing themselves of all the benefits to be derived from visiting foreign countries, not only in order to form new and confirm old commercial connexions, but to obtain an intimate knowledge of the wants, the tastes, the habits, the discoveries and improvements, the productions, and fabrics of other civilized nations. Thus we bring home facts and suggestions; thus we perfect our old establishment, and add new branches to our domostic stock; opening, at the same time, new markets for the sale of our manufacturing and commercial industry, and qualifying ourselves for supplying them in the best and most economical manner. By these means alone, and, above all, by the effect of machinery in improving the quality, and cheapening the fabrication of our various articles of export, notwithstanding an immense load of taxes, and a higher price of grain, our commerce and manufactures have also increased in such a degree, as to surpass the most sanguine calculations of the ablest political economists who have speculated on the prospects of mankind. We should never cease to bear in mind, that we are surrounded by powerful nations, composed of a people equally industrious, and more sober than ourselves, who, released from the turmoil of war, are intent on cultivating the productive arts of peace, and of pushing their commerce and navigation; whose eagerness of competition is stimulated by the view of the rich prizes which we have already won.

The attempts continually made to carry our implements and machines into foreign countries, and to tempt our artisans to settle and superintend them there, evince the high value set by other nations on our mechanical substitutes for hand labor; and as they cannot be directly counteracted, they should be rendered, as far as possible, unavailing, by introducing such successive improvements at home as may always keep us foremost in the career of construction. It would be therefore no less disastrous to the operative, than to the capitalist, were any extraneous obstacles thrown in their way, since any good machine suppressed, or rejected, in this country, would infallibly be received with open arms by some of our neighbors, and most readily by our mechanical rivals in France, Belgium, Germany, and the United States.

Mill architecture is a science of recent origin, which even at this day is little understood, beyond the factory precincts. It had been ably begun by Mr. Watt, but, till it fell into the hands of Messrs. Fairbairn and Lillie, the eminent engineers of Manchester, it was too subject to the whims of the several individuals, often utterly ignorant of statics or dynamics, or the laws of equilibrium and impulse, who had capital to lay out in building a mill. Each had his own set of caprices and prejudices, which he sought to embody in his edifice, little aware how much the different orders of machines depended for the productiveness and precision of their performance, on the right magnitudes, proportions, and adjustments of the mainshafting and wheel-geering.—These are, in fact, the grand nerves and arteries which transmit vitality and volition, so to speak, with due steadiness, delicacy, and speed, to the automatic organs. Hence, if they be ill-made or ill-distributed, nothing can go well, as happens to a man laboring under aneurismal and nervous affections.

About three years ago, the above named engineers dissolved a partnership celebrated over the world; since which time each has expanded his energies, and distinguished himself in a peculiar line of work. I shall have occasion hereafter to describe several of Mr. Lillie's excellent mechanical constructions. Mr. Fairbairn has entered largely into the line of factory architect, for which his three-fold great workshops are admirably adapted. The capitalist has merely to state the extent of his resources the nature of his manufacture, its intended site, and facilities of position in reference to water or coal, when he will be furnished with designs, estimates, and offers on the most economical terms, consistent with excellence, according to a plan, combining elegance of external aspect, with solidity, convenience, and refinement in the internal structure. As engineer he becomes responsible for the masonry, carpentry, and other work of the building, for the erection of a sufficient power, whether of a steam-engine, or water-wheel, to drive every machine it is to contain, and for the mounting of all the shafts and great wheels by which the power of the first mover is distributed. The frontispiece of this volume exhibits a perspective view of a magnificent factory, lately finished by Mr. Fairbairn, and now at work under its spirited proprietor, Mr. Orrell. It is beautifully situated in the environs of Stockport, on a branch of the Mersey, the great river feeder of the cotton trade of England. In beauty of architectural design, it will yield to no analogous edifice, and, may indeed, bear a comparison in respect of grandeur, elegance, and simplicity, with many aristocratic mansions. The length of the apartments in each floor of the body of the house is three hundred feet, the breadth fifty feet, and the height of each floor twelve feet. Each window consists of two casements, extending from its top to

its sill, one of which, nearly as large as a common window, may be thrown entirely open for admitting fresh air, independent of the mechanical ventilation. I have been favored, through the liberality of the architect and proprietor of this pattern structure, with an analytical section and ground plan of it, by which I shall be enabled, in the treatise on the cotton trade, to place before my readers a view of the whole anatomy of the mill, in the following order.

1. Its two-fold heart, or twin steam-engines, one of which makes its maximum effort, while the other makes its minimum, to secure perfect equability of impulsion through all the ramifications of the shafts, and to prevent arterial throbbing or tremor, formerly so common, and so injurious to the work of delicate machines.

2. The great bevel wheel-geering, which transmits the power of the engine in rectangular directions, either transversely or vertically, and with any modification of speed.

3. The horizontal and upright shafts, with their several pulleys.

4. The distribution of the strape, or belts, that convey the power from these revolving shafts and pulleys.

5. The respective positions of the various productive organs in their respective floors, such as the preparation machines, throstles, mules, power-looms, dressing machines, warping mills, &c. &c.

The recent innovations in proportioning the sizes, regulating the connections, and adjusting the movements of the system of shaft-geering, form a fine feature in the philosophy of manufactures. Thus not only an improvement has been made in the regularity of impulsion, but a considerable increase of power from the same prime-mover has been obtained; amounting in some cases, of old mills remounted by Messrs. Fairbairn and Lillie, to fully twenty per cent. The durability of shafts so exquisitely turned and polished, is another great advantage. The spinning factory of Messrs. Ashworth, at Egerton, which has been at work for several years, exhibits an elegant pattern of the engineering just described: for it has some subordinate shafts, hardly thicker than the human wrist, which convey the power of ten horses, and revolve with great speed, without the slightest noise or vibration. The prime-mover of the whole is a gigantic water-wheel of sixty feet diameter, and one hundred horses' power. I have frequently been at a loss, in walking through several of the millwright factories, to know whether the polished shafts that drive the automatic lathes and planing machines, were at rest or in motion, so truly and silently did they revolve.

The method of increased velocities in the driving arms or shafts of factories, is undoubtedly, one of the most remarkable improvements in practical dynamics. It diminishes greatly the inertia of the mass to be moved, by giving to much lighter shafts and wheels the same momentum, and it permits the pulleys or drums, which immediately impel the machines by straps, to be reduced to a size much nearer to that of the steam pulleys fixed on the main axes of these machines. About thirty years ago the velocities of the main shafts, proceeding from the moving power, whether of steam or water amounted to no more than from thirty to forty evolutions per minute, and of the smaller and remoter shafts, to only forty or fifty. At the same period the drums were heavy tubs, and from thirty, to upwards of sixty inches in diameter. The improved system is under deep obligations for its actual state of perfection to the above-named engineers, though it had commenced, as we have stated, before their time. In the mills mounted by these gentlemen it is interesting to see slender shafts, like small sinewy arms, rapidly transmitting vast power through all the ramifications of a great factory.

The following details will place this matter in the clearest light:—A mill propelled by a steam-engine of fifty horses' power was formerly geered with shafts, having an average transverse section of thirty-six square inches, or varying in size from four to eight inches square. An engine of like power at the present day will, in consequence of the increased velocities above described, work with cylindrical shafts not exceeding five and a half, and often only three inches in diameter; possessing therefore an average area of only fifteen square inches, instead of thirty-six. The horizontal shafts that run under the ceilings of the different working rooms are two inches, and seldom exceed two and a quarter in diameter. Hence the mass of geering has been reduced fully one-half. But the shafts now make from one hundred and twenty, to one hundred and fifty revolutions in a minute, and, occasionally, as where trostlers are turned, so many as two hundred in the same time. Thus we see the requisite momentum is gained with a light shaft, while the friction is proportionally diminished, and the driving drum revolves with a velocity in accordance with the accelerated pace of the modern machines. The several speeds will be given in discussing their respective subjects.

The philosophy of manufactures investigates, in the next place, the most economical and energetic modes of applying the motive force to the various working organs; the carding-engines, the drawing-heads, the roving-frames, the throstles, the mules, the power-looms, the dressing-machines, &c.

The British capitalist is vigorously seconded by the British engineer, and need not, like the Continental adventurer, leave his funds long dormant, after an opportunity of placing them profitably in factory enterprise occurs. One mill-wright establishment in Manchester turns out from three hundred to four hundred yards of shaft-geering every week, finely finished, at a very moderate price, because almost every tool is now more or less automatic, and performs its work more cheaply and with greater precision than the hand could possibly do. Where many counterparts or similar pieces enter into spinning apparatus, they are all made so perfectly identical in form and size, by the self-acting tools, such as the planing and key-groove cutting machines, that any one of them will at once fit into the position of any of its fellows, in the general frame.

For these and other admirable automatic instruments, which have so greatly facilitated the construction and repair of factory machines, and which are to be found at present in all our considerable cotton mills, this country is under the greatest obligations to Messrs. Sharp, Roberts and Co. of Manchester. By such aids, fine-cotton spinners are enabled to mount their mules and the subservient frames within their own premises, with peculiarities of construction suited to their style of work; and many of them remodel more or less the apparatus made in the machine-shops. Thus the bobbin and fly-frames of Messrs. Cocker and Higgings, so justly admired, require occasionally to be modified in certain minutiæ, essential to fine work, before being used by certain manufacturers. It is this skill in machine mounting or adjusting, combined with tact in spinning, which gives to our factories not merely their existing superiority over foreign rivalry, but the best security for its permanence. Indeed, the concentration of mechanical talent and activity in the district of Manchester and Leeds is indescribable by the pen, and must be studied confidentially behind the scenes, in order to be duly understood and appreciated.

The following anecdote will illustrate this position. A manufacturer at Stockport, whose name I shall suppress, being, not long ago, about to mount two hundred power-looms in his mill, fancied he might save a pound sterling in the price of each, by having them made by a neighbor machine-maker, instead of obtaining them from Messrs. Sharp and Roberts, in Manchester, the principal coustructors of power-looms. In order to give his fabricator every chance of success, the economist surreptitiously procured iron patterns cast from one of the looms of that company, which in its perfect state costs no more than £9. 15*s*. His two hundred looms were accordingly constructed at Stockport, supposed to be fac-similes of those regularly made in Manchester, and they were set to work. Hardly a day passed, however, without one part or another breaking down, insomuch that the crank or tappet-wheels had to be replaced three times, in almost every loom, in the course of twelve months. The fabric of the cloth was also indifferent. The proprietor perplexed beyond measure, inquired of a neighbor who worked similar power-looms, made by the Manchester mechanicians, whether *his* wheels likewise went to pieces every other day, and learned to his mortification, that not one of them had broken in the course of working, but that the four or five spare ones, originally sent from Manchester along with his two hundred and thirty-six power-looms, were unused and quite at his service. The old proverb of 'penny wise and pound foolish' never had a better illustration. His weaving factory had been most irregular and unproductive, while that of his neighbor had been uniformly prosperous. Being now heartily sick and ashamed of his fac-simile copies, he took measures in secret to have them replaced, as soon as possible, by Sharp and Roberts's substancial machines.

BALLOON VOYAGE TO THE CONTINENT.

The public anxiety has been for some time excited by a report that it was the intention of three gentlemen to make the hazardous experiment of crossing the British Channel in a balloon, and that they resolved to ascend, not from the coast, but from the metropolis itself. The report appears to have been well founded, and, after several attempts on preceding days, which had been abandoned in consequence of the unfavora ble weather; they took their departure yesterday from Vauxhall Gardens. The ascent was intended to be a private and not a public one, so far as the admission to the gardens or giving notice in the newspapers; but the secret was communicated to a few, and those persons, making in all about a dozen, eagerly embraced the opportunity of witnessing so remarkable an event. Mr. Holland, Mr. Monck Mason, and Mr. Green, have the honor and risk of departing on this voyage of discovery. They proposed, by regulating the ascent, to seek for such a stream of air as would take them, if possible, towards Paris, and if that should not be practicable, they would be guided by the current which might lead towards the Belgian capital. They do not appear to calculate on any wind prevailing but that from west-north -west or south-west, which would enable them to fulfill their design, and they boldly encounter all the hazard of being blown down Channel by an adverse breeze on the one side, or the North Sea on the other. They determined, in case they could not make the opposite coast, whether French or Belgian, to remain up in the air all night, and they took care to be provided with warm clothing and provision for such an unpleasant alternative.

The inflation commenced about seven in the morning, and by one everything was in readiness. The balloon was inflated almost to its utmost dimensions, and appeared capable of sustaining an aerial flight for many hours, or even days. In the car were upwards of a ton of ballast, several gallons of brandy and wine, a large supply of coffee, cold fowls, ham, etc., an apparatus, with unslacked lime, for heating the coffee, and, all appliances to insure comfort and prevent starvation and cold. There were also a supply of blue lights, stars, and other fireworks, to be let down at night, if the voyage were not accomplished before dark, in order to enable the æronauts to reconoitre the country from their elevation, and choose the point of their descent, and a number of parachutes, to which letters were fastened, to be dropped at intervals on the shores of the Continent, for the purpose of apprising the public of their transit, arrival, and safety—in a word, a more complete equipment cannot be conceived; and it was highly entertaining to see the preparations of the passengers, and the good humor and confidence with which they shook hands with their friends, and took their seats. They were also furnished with passports from the French and Dutch embassies, and with a letter for the King of Holland from his representative in this country. At one o'clock the inflation of the balloon being complete, the three gentlemen shook hands with their friends, and at a given signal majestically left the earth. The immense machine which held them rose splendidly from the Gardens, hung for a short time in sight of the persons who had collected to witness the daring attempt, and then, feeling the breeze which impelled it, glided away to the eastward, and was gradually lost to the straing eyes of the anxious crowd. The wind was perfectly fair for the French coast. The wind, however, by three o'clock veered more to the north, which would, of course, blow the balloon further to the southward of the French coast. Mr. Gye is already on the continent to receive the intrepid voyagers, and Mr. F. Gye, with Hughes, jun., started last night for Paris to welcome their arrival and to arrange preparations for an ascent from that metropolis. Whatever may be the result of this experiment, we regret that it was not put off till the ensuing spring or the early part of the summer, when a longer day and more favorable weather would diminish essentially the risks. It is also to be regretted that the travellers did not start soon after daybreak, instead of waiting till one in the afternoon, with only four or five hours of light before them.

FROM DOVER.—We have received the following account from a correspondent:—

"*Dover five o'clock*, P. M. We were this afternoon highly gratified by witnessing the passing of Mr. Green's splendid balloon on his ærial voyage from London to the Continent, going a little to the eastward of the town, or very nearly over the Castle, the spot from which Jeffrey and Blanchard, some years since, took their departure to cross the Channel in a similar manner. A few minutes befose five he signalised his departure from England by displaying a very brilliant light, which continued burning obout ten minutes. The course of the balloon, on his crossing the Channel, was in a direction nearly E. N. E., with a gentle wind by the church vane W. S. W. Should he continue this course he will probably by morning in make the island of Walcheren, or South Beveland; or passing over these, continue his course to Holland. The altitude of the balloon was increasing as he approached Dover, and continued steady about the same as he passed from over *terra firma* to cross the Channel. The velocity of the balloon did not exceed four or five miles per hour. *Half past Six o'clock.* The balloon is not yet out of sight, its situation being distin guished by variegated lights."

Another Dover correspondent has transmitted us the copy of a note which was dropt from the balloon in a parachute near the village of Whitfield about two miles from Dover. The party appeared to be according to this informant going towards Dunkirk near the Belgic coast. The person who picked up the note was at work at Whitfield Mill, and, seeing the balloon descending, he stopped the mill to render assistance, when he saw the parachute coming down, from which he took the letter; it is as follows:—

"BOUND FOR THE CONTINENT."

"Mr. Green, Mr. Monck Mason, and Mr. Robert Holland, present their compliments to the Mayor of Dover, and beg to inform him that they left Vauxhall Gardens at half-past one o'clock, and were nearly over Canterbury at four o'clock.

"To the Mayor of Dover." [Globe.]

Dr. Vignet, first physician to the Military Hospital at Phalsburgh, has confirmed a discovery made by Dr. Viale, of the existence of insects in the Cholera. When Dr. Vignet was at the head of the hospital at Oran, he had upwards of 400 Cholera patients under his care, and ascertained to a certainty that the Indian Cholera is occasioned by myriads of insects, some visible to the naked eye and some not. He has published, at Metz, a work on this subject, and on the treatment he used in Africa in curing the disease.

AMERICAN RHENISH. At Vevay on the Ohio, the vine is extensively cultivated by Swiss emigrants, who founded a colony there as early as 1804. Some of the vineyards have twenty acres in vines, which yield nearly 4,000 gallons of wine per year—worth from one to three dollars per gallon. The quality of the wine made at some vineyards, is pronounced by competent judges equal to the best Rhenish imported into this country.

We have just learned that the Government of Prussia has placed a vast mass of the most valuable statistical information at the disposal of Mr. M'Culloch, to be used either for the improvement of his dictionary or otherwise, as he may think fit. This conduct reflects infinite credit on the intelligence and liberality of the Prussian Government. The information communicated is all official. It is in the shape of replies to queries transmitted to Berlin through his Excellency, Baron Bulow, who has taken the greatest interest in the matter. We have been assured that his Prussian Majesty, as well as his Ministers, was pleased to express his approbation of the object for which the information was sought, and his wish that it should be full and authentic. It may be questioned whether there be another Government in the world (certainly we know of none) that would, at the mere solicitation of a private individual—and that individual a foreigner—have taken so much pains to furnish him with the means of fairly appreciating and exhibiting its policy in an economical point of view.

[Chronicle.]

The following phenomenon was observed lately at Gluckstadt, on the Elbe, and at Stzehoil and Heilingenstedten on the Stoer. During the continuance of twelve hours, the tides of these rivers neither rose nor fell, the waters remained constantly at the same level, and the ships at anchor, instead of turning as usual at the flux and reflux, remained immoveable. Some persons attribute this to an earthquake in some distant country, as the same thing happened on the 1st November, 1755, the day of the great earthquake at Lisbon.

We learn from Naples, that Professor Zalm has recently discovered, at Pompeii, a table service in silver, comprising 44 plates, 1 large dish, 3 small vessels, 2 spoons, and 4 forks, of admirable workmanship. They are all in very good preservation, and were to be sent to the Royal Family at Portici.

Advertisements.

A YOUNG GENTLEMAN,

a Graduate of the United States Military Academy, is desirous of obtaining employment as CIVIL ENGINEER. The situation of Assistant Engineer on some work (Railroad or Canal) would be preferred. The most unexceptionable references as to character and ability will be given.

Address J. M. N., at the office of the Railroad Journal, post paid. 1—4t

MACHINE WORKS OF ROGERS,

KETCHUM AND GROSVENOR, Paterson, New-Jersey. The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

RAILROAD WORK,

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON WOOL AND FLAX MACHINERY,

Of all descriptions and of the most improved Patterns, Style, and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Callenders; Lathes and Tools of all kinds; Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR.
Patterson, New-Jersey, or 60 Wall street, N. Y
51tf

TO CONTRACTORS

STONE CUTTERS and MASONS.

JAMES RIVER and KANAWHA CANAL.—Contractors for mechanical work are hereby informed that a large amount of Masonry, consisting of Locks, Culverts, and Aqueducts, is yet to be let on the line of the James and Kanawha Canal.

Persons desirous of obtaining such work, and prepared to exhibit proper testimonials of their ability to execute it, will apply at the office of the subscriber in the city of Richmond.

Stone Cutters and Masons wishing employment in the South during the winter months, may count with certainty on receiving liberal wages, by engaging with the contractors on the work.

CHAS. ELLET, Jr., Chief Eng. J. R. & K. Co.
Richmond, Nov. 29, 1836. 51—6t

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens	Ames'	superior	back-strap	Shovels
150 do	do	do	plain	do
150 do	do	do	cast steel	Shovels & Spades
150 do	do	do	Gold-mining	Shovels
100 do	do	do	plated	Spades
50 do	do	do	socket	Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany

N. B.—Also furnished to order, Shapes of every description, made from Salsbury refined Iron v4—tf

AN ELEGANT STEAM ENGINE AND BOILERS, FOR SALE.

THE Steam Engine and Boilers, belonging to the STEAMBOAT HELEN, and now in the Novelty yard, N. Y. Consisting of one Horizontal high pressure Engine, (but may be made to condense with little additional expense) 36 inches diameter, 10 feet stroke, with latest improved Piston Valves, and Metallic packing throughout.

Also, four Tubular Boilers, constructed on the English Locomotive plan, containing a fire surface of over 600 feet in each, or 2500 feet in all—will be sold cheap. All communications addressed (post paid) to the subscriber, will meet with due attention.

HENRY BURDEN.
Troy Iron Works, Nov. 15, 1836. 47—tf

PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N. Y., July, 1831.

** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

RAILWAY IRON, LOCOMOTIVES, &c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

									lbs.
350 tons	2½	by	¼,	15 ft in length,	weighing				$4\frac{68}{100}$ per ft.
280 "	2	"	¼,	"	"	"	"	"	$3\frac{50}{100}$ "
70 "	1¾	"	¼,	"	"	"	"	"	2½ "
80 "	1½	"	¼,	"	"	"	"	"	$1\frac{25}{100}$ "
90 "	1	"	¼,	"	"	"	"	"	¼ "

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2¼, 2¾, 3¼, 3½, 3¾, and 3¾ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.
28—tf Philadelphia, No. 4, South Front st.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation. J25tf

NOTICE TO CONTRACTORS.

Proposals will be received at the office of the Hudson and Berkshire Railroad Company, in the city of Hudson, until the 15th of January, 1837, for One Million feet, board measure, of Southern pine, of the following dimensions:—6 inches square, and in lengths of 21, 24, 27, and 30 feet long—also, for 14,000 Chestnut or Cedar ties, 8 feet long, and 6 inches square—and also, 4,000 sills, of Hemlock, Chestnut, or White Pine, 4 by 10 inches, and in lengths of 15, 18, and 21 feet long. The whole to be delivered by the 1st day of July, 1837. GEORGE RICH
Engineer.
Hudson, Dec. 22, 1836. 52 4t

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendant and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

12th month, 12th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,
33—tf. GEORGE COLEMAN,

A SPLENDID OPPORTUNITY TO MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours. All letters addressed to the subscriber (post paid) will receive due attention.

Troy Iron Works, HENRY BURDEN.

N. B. Horse Shoes of all sizes will be kept constantly for sale by the principal Iron and Hard-ware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORISED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render THE MOST PERFECT SATISFACTION, both as regards workmanship and quality of Iron, will be received back, and the price of the same refunded. H. BURDEN. 47—tf

HARVEY'S PATENT RAILROAD SPIKES.

THE Subscribers are manufacturing and are now prepared to make contracts for the supply of the above article. Samples may be seen and obtained at Messrs. BOORMAN, JOHNSON, AYRES & Co. No. 119 Greenwich Street, New-York, or at the Makers in Poughkeepsie, who refer to the subjoined certificates in relation to the article.

HARVEY & KNIGHT.

POUGHKEEPSIE, October 25th, 1836.

The undersigned having attentively examined HARVEY'S PATENT FLANCHED and GROOVED SPIKES is of the opinion, that they are decidedly preferable for Railroads to any other Spikes with which he is acquainted; and shall unhesitatingly recommend their adoption by the different Railroad Companies whose works he has in charge.

BENJ. WRIGHT,
Chief Engineer N. Y. & E. R. R.

NEW-YORK, April 4th, 1836.

Harvey's Flanched and Grooved Spikes are evidently superior for Railroads to those in common use, and I shall recommend their adoption on the roads under my charge if their increased cost over the latter is not greater than some twenty per cent.

JNO. M. FESSENDON, Engineer.
BOSTON, April 26th, 1836. No. 1—6t.

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)
NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO.
4—vtf

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y